SOCIAL NETWORKS AND INFORMAL POWER IN ORGANIZATIONS

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Chapter 1

Introduction

1 INTRODUCTION

1.1 Informal Power in Organizations

1.1.2 Classic Examples

What happens when your boss's secretary doesn't like you? You might find that when you try to make an appointment, the secretary can't fit you in; and your memos tend to find their way to the bottom of the in-tray. A secretary wields considerable influence over the boss's activities by acting as a gatekeeper.

The story of informal power at work is a familiar one, providing the plotline for countless books and movies. In the 1954 classic "On The Waterfront", the corrupt union boss will not employ lowly dockworker Marlon Brando, and instead has him beaten up – only to find that the other stevedores refuse to work. Burt and Ronchi's (1990) study describes a real case in which life seems to imitate art. During a cost-cutting exercise at an industrial plant, the company's management fired the informal leader to whom many people were beholden for their jobs, and for the references needed to get any future jobs at the plant. Deep trouble ensued: shootings, bomb threats, and the leaking of confidential management documents became the order of the day. The management team could not understand what was happening, as they were unaware that so many of the workforce had such strong social ties to this individual.

Of course, informal power is not always a problem for an organization's formal leadership – it often has beneficial effects. Think of someone who may be relatively junior, but nevertheless seems to have the trust and "following" of colleagues: such a person may play a critical role in the smooth operation of the organization, as they can moderate conflicting views and focus the group's thinking. They have a strongly positive effect on morale, as they are seen to take others' opinions seriously, and to look out for their colleagues' interests. Besides the favorable effects on intra-organizational dynamics, a feeling of personal power in itself may also enhance enjoyment, provide a sense of achievement and generate a more positive attitude to work.

The first two examples illustrate how informally powerful actors can frustrate organizational functioning by manipulating network structures and exercising social influence (Balkundi & Kilduff, 2005). The last example shows that informally powerful actors who win the commitment and trust of others can be beneficial both for the organization as a whole (Krackhardt & Hanson, 1993) and for individuals' personal well-being. All three examples demonstrate how participants in organizations can assume and wield power far greater than that which derives from their formal position.

Given that informal power affects all organizations and has a crucial influence on their functioning, a question arises: *What are the antecedents of individual informal power?* And *what are its*

potential consequences? In other words, *under what conditions do informally powerful actors emerge?* And, *under what conditions does informal power affect group dynamics (e.g., friendship formation) and individual outcomes (e.g., well-being)?*

1.1.3 Defining Informal Power

Research shows that power is a fundamental dimension in social interaction, used by humans to define, understand, and organize their social relationships (Brown, 1985; Kramer & Neale, 1998; Lonner, 1980; Mazur, 1973). Power differences between individuals pervade a variety of social roles and settings, and different cultures and times (Baumeister, 1986; Hofstede, 1980; Lonner, 1980). Within organizations, in particular, power determines who has access to valued resources, who has influence over others, and who makes important decisions.

Power has been defined as the ability to "get things done", to "get others to do things they would not otherwise do" (Kanter, 1979; Salancik & Pfeffer, 1977), to mobilize resources (Roberts, 1986), or to lead through "personal appeal" (Krackhardt, 1990). It has been conceived of as a structural variable representing the inverse of dependence (Emerson, 1962). On the other hand, it has been recognized that social power involves a phenomenological process whereby individuals attribute power to certain others (see Calder, 1977; Lenski, 1966; McClelland, 1970; Ng, 1981; Ossowski, 1963; Pfeffer, 1977; Van den Berghe, 1963). This perspective on power incorporates the notions of reputation, since one is powerful only if he or she is perceived as such by others (Calder, 1977; Pfeffer, 1977).

Following this established tradition in power research (e.g., Brass, 1984; Brass & Burkhardt, 1993; Krackhardt, 1990; Pfeffer, 1981a), we adopt the phenomenological perspective and define informal power as "organized mental representations of one's own and others' power" (Fiol, O'Connor, & Aguinis, 2001, p. 225; Meindl, Ehrlich, & Dukerich, 1985; Pastor, Meindl, & Mayo, 2002; Pfeffer, 1977). A network of power reputations emerges from power attributions in dyads of organizational members: "A manifestation of the distribution of power in a system of actors will be the network of influence and deference relations among actors in the system. Actor B is influenced by, defers to, actor A if B perceives A as being powerful relative to himself. The influence of one actor over another is the perception by the subordinate of the greater relative power of the superior" (Burt, 1977, p. 254).

1.1.4 Studying Social Networks and Informal Power – Data Collection

To examine the research problems and the hypotheses elaborated throughout this book, data was collected in panel studies carried out in two distinct organizational contexts - a German paper factory, and a public sector child-care organization in the Netherlands. The general purpose of the panel was to examine the informal social network dynamics within

the organizations, as well as to gain insight into various kinds of organizational behavior and employee attitudes.

The selected organizational settings had several characteristics that enabled us to investigate the specific mechanisms underlying the relationship between employee power reputations and interpersonal networks of relationships. First, the relatively small size of the teams / departments allowed us to collect complete social network data. Moreover, given our particular interest in the informal group dynamics, the different types of relationships among employees could be addressed directly and accurately using self-administered questionnaires based on a roster of the names of all employees working at the specific site (see also Brass, 1984; Pfeffer, 1981a). In contrast to traditional research methods, lengthy network surveys pose a demanding task for their participants, who are required to carefully think about their relationships with every single colleague, and respond in detail about multiple aspects of these relationships. Given the increasing amount of information each respondent would need to provide, bigger sample sizes might have compromised the quality of the data gathered, leading to unreliable estimates of the employee power reputations within a team / department, the frequency of contact between employees, and the quality of the relationships between them. This would have made it difficult to draw firm conclusions regarding the associations between power reputation and organizational networks.

Second, research on informal power and interpersonal networks dynamics has generally been confined to hierarchically structured, competitive organizational contexts in the for-profit sector (e.g., investment bankers; Burt, 2005). In fact, Chapter 2 of this book is based on network data collected in a setting with precisely these characteristics. Chapters 3 through 5, however, are based on the data collected in an organization with a very different hierarchical structure and staff characteristics. In particular, this latter setting was characterized by a hierarchy flatter than exists in most for-profit organizations, with far fewer promotion opportunities. The workforce also consisted predominantly of female part-time employees, rather than full-time male employees. Focusing on these contrasting organizational settings allowed us to investigate how general the identified processes behind power and network evolution are. Even more importantly, it provided a unique opportunity to study the mechanisms underlying the generation of power reputation in a setting where status competition is not the driving force behind relational dynamics. Below we provide additional information on the organizational settings we investigated. Further detail on the research design and the data collected for each study is presented in the method sections of the subsequent individual chapters.

The German Paper Factory. Chapter 2 is based on the four measurements of network data collected from the members of the "extended" management team of a German paper factory between late 1995 and mid 1997 (see Wittek, 1999, for a detailed description of the organizational setting). The organization had seven departments: production; the chemical lab; maintenance; logistics; personnel; technical customer service; and a project department.

The "extended" management team consisted of the Chief Operating Officer, department heads, their assistants, and junior engineers reporting to the department heads. There were 17 team members, all male, with an average age of 40, and an average tenure of 12.5 years.

The Dutch Child-care Organization. Chapters 3 through 5 are based on the data collected in the child-care organization between February 2008 and June 2010, in collaboration with four other researchers. The organization was an independent, subsidized, regional child protection institution providing specialized care for children at risk and their respective families. The diverse intervention techniques used by the organization range from daycare and residential units to at-home coaching of parents and foster families. It comprised around 750 employees, the vast majority of who were women working part-time.

Chapter 3 is based on the cross-sectional network data from a survey administered in spring 2009 to 33 employees in one of the departments of the child-care organization. In Chapter 4, we analyze social network data from three waves of the survey administered to 44 employees in another preschool department of the child-care organization (spring and autumn 2009, and spring 2010). Finally, Chapter 5 is based on two waves of data from an employee survey collected in a random sample of 82 of the employees across the whole organization (conducted in autumn 2009 and spring 2010).

In the following section we provide an overview of the mechanisms related to the antecedents and the consequences of informal power. We also detail the main findings of the four empirical studies with regard to each mechanism.

1.2 Informal Power - Antecedents and Consequences

Variations in power reputation can have a tremendous impact on the success or failure of many organizational processes (Dahl, 1957; Lord & Maher, 1991; Wrong, 1968). Unsurprisingly, then, there has been much theorizing and research on the specific mechanisms that underlie power differences, ranging from structural properties of the organizational context and one's structural position in the intraorganizational networks (e.g., Emerson, 1962), to individuals' enduring personal characteristics (e.g., Harms, Roberts, & Wood, 2007). Organizational scholars have also long been interested in the effects of power on individual and group-level outcomes, such as organizational performance, and the satisfaction and well-being of employees (Burt, Jannota, & Mahoney, 1998; Markovsky, Skvoretz, Willer, Lovaglia, & Erger, 1993; Molm, 1990; Molm & Cook, 1995).

The research presented in this dissertation draws on the broad and diverse literature on power, and addresses *eight core mechanisms* related to the four types of antecedents and four types of consequences of power reputation. In the subsequent sections of the introductory chapter both standard and the less prominent mechanisms are elaborated upon and

developed further. The description of each mechanism is complemented by an overview of the relevant empirical findings.

1.2.1 Antecedents of Informal Power

Structural position. Given that power is typically defined as involving a social relationship or some interdependence among actors, a social network approach seems particularly appropriate to its investigation (Brass, 1984). Social network theorists conceptualize organizations as networks of interrelated structural positions, occupied by individual employees. Since informal organizational networks are a powerful mechanism for the control and distribution of a wide array of resources (Brass, 1992; Krackhardt, 1990), an individual's position in the organizational informal *social structure* would be expected to affect his or her power reputation. The reasoning behind this prediction follows from the assumption that actors who are located in advantageous network positions have greater access to and control over relevant information and other valuable resources, and hence are viewed as powerful. This structuralist notion of power as a function of the centrality of an actor's position in a social system has been fueled by the empirical demonstration that power is derived from not being dependent on others, from being able to constrain the actions of others, and from having alternative exchange opportunities (Aghion & Tirole, 1997; Balkundi & Kilduff, 2005; Brass, 1984, 1992; Burt, 1992; Cross & Prusak, 2002; Emerson, 1962; Krackhardt & Hanson, 1993). Overall, organizational networks are viewed as "prisms" through which others' reputations and potential are perceived, as well as "pipes" through which resources flow (Podolny, 2001). "The network that filters information coming to you also directs, concentrates, and legitimates information about you going to others" (Burt, 1992, p. 14). A well-embedded employee, therefore, is in a better position to create a favorable power reputation among the group members than an individual with few ties to others.

Consistent with the structuralist heritage of social network analysis, Chapter 3 gives an insight into the structural antecedents of power reputation in the non-hierarchical child-care organization. It demonstrates that well-embedded employees who engage in frequent contact with many colleagues are perceived as more powerful: the number of contacts appeared to be perceived by others as an indicator of influence. Interestingly, *none* of the other, more complex and thus less visible, predictors of structural advantage (e.g., betweenness centrality, closeness centrality, aggregate and dyadic constraint) had an effect on employee power reputation.

Sharing a close personal tie. It has been proposed that power is related to being "in the know" in both the formal and informal sense (Kanter, 1979, p. 66), which inevitably means having frequent contact with a wide variety of co-workers, and close personal relationships with others in the organization. Personal ties are usually characterized by mutual trust and respect, and often involve sharing of discrete and potentially valuable information. Close, frequent, and direct contact with a co-worker enhances the availability of first-hand

information concerning his or her social relations to other group members, as well as the degree of influence he or she has in these relationships. Previous research has suggested that individuals in organizations often have a positively biased perception of their own popularity (Kumbasar et al., 1994). However, given that colleagues whose relationship is characterized by trust, closeness and affection are likely to have a shared mindset and respond positively to each others' behaviors and attitudes, the presence of interpersonal trust increases the likelihood to believe the trusted person's (biased) accounts regarding his or her interactions with third parties (Hess & Hagen, 2006). As a result, we would expect that power attributions between employees linked by an interpersonal trust relation are more likely than power attributions to co-workers with whom no interpersonal trust relation exists.

In line with this prediction, our findings in Chapter 2 suggest that having strong trust relationships with colleagues enhanced an employee's tendency to attribute power to them. Verbal stories from trusted interaction partners seem to contain signals about their position in the group, thereby influencing one's assessment of their power.

Perceived trust in others. Embeddedness in trusting social relations has also been linked with a heightened sense of personal power. When individuals perceive that interpersonal trust is present, their feelings of potency, self-worth, autonomy, and impact are enhanced (Corsun & Enz, 1999; Manz & Sims, 1993; Proenca, 2007; Thomas & Velthouse, 1990). Employees with high trust in colleagues are likely to be exposed to positive signals from others about the value of their opinions and the quality of their performance.

Perceived trust in others seems to be a valuable source of competence and control, contributing to the employee's belief that they can influence the organization's important outcomes, processes, and strategies (Ergeneli et al., 2007; Erturk, 2010). Specifically, the study in Chapter 5 showed that high levels of generalized trust in colleagues boosted employees' feelings of power.

Reputation. Power reputation can be conceptualized as social capital generated by individuals who invest in social relations with others, and who can reap greater or lesser rewards depending upon the arrangement of social connections surrounding them (Pastor et al., 2002). To enquire about an individual's reputation, people constantly scan the social environment for cues and associations from others in the group that could tell them something about that person's position (Sharman, 2007).

The reputation mechanism involves a number of elements. First, the inferences and judgments of actor's power formed and made by others may become an effective signaling instrument by inducing the impressions that one has power. If a colleague is perceived as being powerful by many others (i.e., has a positive power reputation), this information is expected to spread via the network and manifest itself in additional power attributions. The empirical findings in Chapter 2 confirm this notion: the number of power attributions a person possessed influenced the number of future attributions the person received. In other

words, the likelihood of a person to attract new power ties appeared to be proportional to the power ties they had already acquired in the past.

Second, close personal bonds to high-power group members can be highly advantageous for employees in organizations (e.g., Kilduff & Krackhardt, 1994). The reason is that the perceived status of exchange partners acts like a distorting prism to filter attributions concerning the focal individual (Podolny, 2001). Being friends with the powerful increases one's own social capital value within a given social circle, thereby providing strong incentives for others to perceive one as a powerful actor and a potentially useful contact.

Our findings in Chapter 2 provide support for this so-called "basking in reflected glory" effect. Having a trust relationship with a superior (i.e., a formally powerful co-worker) had a significant positive effect on others' perceptions of one's power. Remarkably, however, Chapter 4 demonstrates that empirical support for this effect seemed to depend on the type of organizational setting, as well as the nature of power of the high-status actor. One intriguing finding is that whereas in organizations with a steep hierarchy being trusted by a high-ranking person appears to have a positive signaling effect, in a setting characterized by a flat hierarchy having a friendship tie to an informally powerful colleague does not yield substantial benefits in terms of one's power reputation.

Finally, going beyond the structural outlook on power, it has been argued that people gain informal power by expressing and earning their dominance in social interactions (Lee & Ofshe, 1981; Mazur, 1985; Strayer, 1995). One's power reputation is strongly affected by individual action, and specifically employees' skill at applying an appropriate behavioral style to influence others (e.g., Allen & Porter, 1983; Ferris, Adams, Kolodinsky, Hochwarter, & Ammeter, 2002; Kipnis, Schmidt, & Wilkinson, 1980; Mowday, 1978). A considerable number of empirical studies support this idea. For example, Douglas and Ammeter (2004) reported that subordinate perceptions of leader political skill were a significant predictor of leader effectiveness ratings, after controlling for leader demographic and social skill variables. Moreover, Brass and Burkhardt (1993) showed that the strategic behavior of organizational actors contributes to their power reputation regardless of their structural position in the informal network. Overall, high-power people have been shown to use more power strategies (Koslowsky & Schwarzwald, 1993; Michener & Burt, 1975), and to have better relational skills, making them more successful at persuading and influencing others (Herold, 1977; Kipnis & Schmidt, 1988; Kipnis et al., 1980; Lee & Tiedens, 2001). Hence, the emergence of power appears to be inevitably associated with individual agency: "Having a basis for power is not enough. The individual must act" (Mintzberg, 1983, p. 25).

In line with the agency-based perspective and dominance theories, we found that strategic behavior affects employees' power reputation regardless of their structural positions in the informal social network. The observed effects appeared to be both positive and negative, depending on the type of strategies measured and the specific organizational

context being studied. In the hierarchical paper factory setting studied in Chapter 2, an employee's preference for direct or indirect horizontal strategies did not enhance their power reputation. However, a preference for passive and indirect vertical strategies negatively affected others' judgments of one's power. In Chapter 3 we focus on the non-hierarchical child-care organization, and assessed respondents' likelihood to engage in strategic power play when trying to influence the other group members. The findings of this study emphasized how in addition to being a useful tool for overcoming a lack of resources, skillful strategic activity at the workplace signals one's dominance to others, and thereby enhances one's power reputation.

1.2.2 Consequences of Informal Power

Allocation of (more) power to others. Further elaborating upon the structural approach to power, we argue that occupying a strong or weak structural position in the network does not only affect an individual's power reputation, but has also an impact on an employee's power attributions to the other group members. Occupying powerful positions triggers feelings of being in control (Anderson & Galinsky, 2006; Galinsky, Gruenfeld, & Magee, 2003), and nourishes the perception that others are less powerful. By implication, occupying a disadvantaged network position denotes a condition of dependence and limited autonomy (Burt, 1992; Cook & Emerson, 1978), resulting in feelings of helplessness and apprehension (Keltner, Gruenfeld, & Anderson, 2003), and an elevated tendency to believe that others have power over you. Hence, individuals in a structurally weak network position are expected to provide more power attributions to other group members than individuals in advantageous positions.

In line with this prediction, Chapter 3 shows that differences in structural positions affect employee inclination to attribute power to others in the group. In particular, being weakly embedded enhanced the tendency to make power attributions about one's co-workers.

Receiving (more) friendship ties from others. Relationships with individuals who have a higher status and who are more popular are likely to be beneficial (Graen, Cashman, Ginsburg, & Schiemann, 1977). The high-power actors are believed to control the resource flows and potential opportunities in organizations, possess more decision power, and have greater social status. A personal connection to the informally powerful actors can provide the less powerful with more opportunities to access valued resources, and gain them distinct competitive advantage (Braendle, Gasser, & Null, 2005). High-power actors are therefore likely to be actively sought out by others interested in establishing personal ties to them (Benjamin & Podolny, 1999). The motivation to initiate friendship relations to the powerful may be further boosted by the presence of a salient gain goal, and by an individual ability to instrumentalize social relations to further own objectives. For example, employees with better strategic relational skills, as well as high self-monitors, are highly motivated to achieve

and maintain favorable reputations (e.g., elevated social status), and therefore may be particularly prone to invest in exchange relations that can be useful in meeting their goals. Their elevated instrumental tendencies are likely to promote their confidence and ability to befriend the powerful.

The longitudinal study in Chapter 4 offers novel insights into these important but usually underestimated effects of individual disposition on the dynamics of social networks in organizational settings. Our findings suggest that power perceptions may serve as a pathway to establishing close personal ties (i.e., friendship) to actors who can potentially be useful in trying to accomplish one's personal goals within a given organizational context. Most remarkably, however, the relationship between power and friendship seems to depend on particular individual characteristics. Strategic relational skill and self-monitoring disposition had a significant positive effect on the tendency to establish potentially advantageous personal bonds, such as friendship ties to powerful co-workers. We were able to demonstrate that people clearly differ in the degree to which they are driven by instrumental motives. Thus, not all employees were equally inclined to befriend the powerful, but the more strategically oriented ones actively pursued the potential opportunities presented by a tie to the high-power colleagues.

Allocation of friendship by the powerful. High-power individuals are to a great extent guided by self-serving interests, seeing relational partners as objects that may be helpful in meeting their goals (Fredrickson & Roberts, 1997; Gruenfeld et al., 2003). Personal relationships of the powerful have been portrayed as strategic rather than purely affiliative (Burt, 1998; Karuza & Brickman, 1981). Drawing on this earlier empirical evidence, friendship connections and social liking are expected to be used by the powerful actors to maintain their esteemed position in the group. In addition to these instrumental motives, exchange relationships between organizational members are governed by the normative obligation to comply with reciprocity expectations (e.g., Molm, Schaefer, Collett, 2007), and are based primarily on the anticipation that benefits will be given in return for benefits received (Winstead & Derlega, 1986). According to the reciprocity principle, individuals should not benefit from others' benevolence without providing appropriate compensation: those who receive are also supposed to give. This reciprocity concern is expected to affect the friendship attribution process. Deference and allocation of esteem may, therefore, become "reciprocated" by friendship. Taking these arguments together, powerful employees are expected to attribute friendship ties to those colleagues who attribute power to them.

Consistent with our expectations, informally powerful group members tended to befriend the co-workers who allocated power to them. This empirical result confirms that high-power actors have a much more pragmatic approach to relationships – they are more inclined to objectify their friendship ties as strategic tools to achieve specific goals (Lee & Tiedens, 2001). To that end, social relations with group members who hold a person in high esteem prove to be instrumental in bringing more power to the informally powerful. Our

finding also yields support for the notion that social exchange relationships are governed by the reciprocity principle. Thus, power attributions are "reciprocated" with friendship, which in turn appears to be "traded" for deference.

(More) well-being. Social capital embodies personal contacts through which opportunities and support are received, allowing individuals to achieve their goals and objectives (Burt, 1992, 2000). In line with this general idea, the common assumption is that social relations and individual position in a group are fundamental to psychological well-being (e.g., Bourdieu, 1986; Burt, 1992; Coleman, 1988; Hurlbert, 1991; Lowe & Schellenberg, 2001; Requina, 2003; Umberson, Chen, House, Hopkins, & Slaten, 1996). This implies that an individual's subjective perceptions of their power and status in a group are crucial to understanding how they feel about and react to their work. Self-beliefs often constitute positive perceptions about one's abilities and personal commodities. These positive self-beliefs may become important sources of positive mood, a more positive affect, higher self-esteem and increased motivation that in turn are likely to induce more optimistic interpretations and judgments about social events (Forgas & Locke, 2005). Disregarding the cognitive processes triggered by the social context may lead to incomplete understanding of the conditions under which employees may feel more or less satisfied with their jobs. For example, in situations where trust in co-workers is lacking, employees' personal sense of power is expected to become a substantial motivation source that will "compensate" for the affective benefits they fail to receive from the interpersonal trust relationships.

The development and empirical test of a conceptualization of how perceptions of interpersonal trust and personal sense of power combine to affect individual job satisfaction were the focus of Chapter 5. Our findings suggest that trust contributes to job satisfaction via personal sense of power, particularly among employees who express moderate to low levels of trust in other group members. In cases when trust and mutual support appear to be lacking, employees' appraisals of their personal power therefore take on increased importance, and serve as crucial sources of motivation and satisfaction.

Table 1.1 summarizes the addressed mechanisms related to the antecedents and the consequences of informal power for every empirical chapter of this dissertation (2 to 5).

Table 1.1 *Social Mechanisms Tested in the Subsequent Chapters of this Book*

Mechanism	Chapter 2	Chapter 3	Chapter 4	Chapter 5
ANTECEDENTS				
Structural position		**X**		
Close personal tie	**X**			
Perceived trust				**X**
Reputation	**X**	**X**	**X**	
CONSEQUENCES				
Allocation of power		**X**		
Receiving friendship			**X**	
Allocating friendship			**X**	
Well-being				**X**

1.3 Informal Power in Organizations – Discussion and Conclusion

Although there has been considerable theorizing and research on employees' informal power in organizations, previous work has been highly fragmented and dispersed across different sub-disciplines of the social sciences. The empirical findings presented in this dissertation provide new insights into the social mechanisms related to the antecedents and the consequences of informal power. In this concluding section we discuss the theoretical implications of our main results by taking up a broader, more abstract perspective on the addressed mechanisms. The chapter concludes with an elaboration of possible directions for future research.

The eight core mechanisms explored in this book have been addressed through three levels of analysis, namely the aggregate structural, inter-individual (dyad), and intra-individual level. In what follows, we discuss each analytical level in turn and draw some conclusions.

1.3.1 The Aggregate Structural Level

One of the key aspects of organizational network research is its emphasis on structural patterning of social life (Kilduff, Tsai, & Hanke, 2006). Revealing the underlying structural factors through which actors generate and recreate network ties, and identifying the specific social-structural positions occupied by particular individuals in the social system can help understand how informal power in organizations is generated. Different types of structural advantage indicators have been demonstrated to relate to attributed power (Brass, 1984, 1992; Brass & Burkhardt, 1993; Burt, 1992; Cross & Prusak, 2002; Krackhardt & Hanson, 1993). This body of research has generated crucial insights into the nature of power within organizations. However, so far it has been restricted to the aggregate level structural

characteristics of actors receiving power attributions. We suggest that this research needs refinement in two ways. First, to achieve a more accurate operationalization of structural power, inter-individual (dyad) level indicators and processes should be taken into consideration. Second, studies on power should be more specific with regard to intra-individual processes that are unrelated to structure.

1.3.2 The Inter-individual (dyad) Level

In this dissertation we argue that a comprehensive analysis of antecedents and consequences of informal power in organizations needs to account for the allocation of ties within the dyad (e.g., power attributions, friendship choices), and the dynamic interrelationships between different kinds of informal networks. Going beyond the aggregate level of analysis, the longitudinal study in Chapter 2 emphasized that employees' personal ties serve as an important source of information about others' power positions. From the current study it can be concluded that the presence of interpersonal trust can breed power attributions between organizational actors.

Some of the antecedents and consequences of informal power are likely to remain undiscovered unless the different roles that organizational actors can assume (i.e., senders and receivers of ties) are clearly disentangled. The studies in this book highlighted substantial differences in the employees' inclination and motivation to either send or receive ties. In Chapter 3, we tested whether the differences in structural positions affect employee tendency to attribute power to others in the group. The results yield support for the notion that whereas the more visible structural advantage plays a crucial role in explaining that person's *own reputation as a powerful actor*, it is the structural disadvantage that matters mostly for a person's *power attributions about others*.

Another benefit of adopting a perspective of two parties sharing a social tie is that it allows the study of not only the formation of personal ties to the informally powerful individuals, but also the ties originating from the high-power group members. Interestingly, we were able to demonstrate that power allocations are often "reciprocated" with other informal relationship types, such as friendship (Chapter 4). Through a power attribution employees may signal their trust in another person's competence, and thereby facilitate friendship with him or her.

Finally, by taking into consideration both the aggregate (e.g., in-degree, betweenness, closeness, aggregate constraint) and the dyad level measures of structural advantage (e.g., dyadic constraint), we were able to capture more accurately the availability of alternative exchange options within specific bilateral exchange situations and its relation to power (Chapter 3). An interesting conclusion of the present study is that to assess a colleague's power position, group members seem to use rough and easily accessible cues about that person's network embeddedness and global status in the group (such as the number of

contacts), rather than complex indicators of their structural advantage that are difficult to observe. Hence, power reputations at the workplace appear to be driven by *visibility* rather than by more subtle structural advantages. This finding draws attention to the important, though largely neglected notion that being an efficient actor in Burt's sense (i.e., developing unique, non-overlapping relationships with distinctly different people and acting as a go-between for those not connected with each other) does not always provide a real structural advantage. Future research might benefit from explicitly acknowledging that predictions and insights generated by Burt's structural hole theory (Burt, 1992) may not apply to the same degree in all organizational contexts.

1.3.3 The Intra-individual Level

Refining the focus on aggregated structure into the inter-individual direction certainly has significant implications for explaining the generation of informal power in organizations. However, we go one step further and argue that the agency and cognitive domains of attitudes, behavioral strategies and personal characteristics at the intra-individual level are likely to have an equally – or potentially more – important effect on one's power reputation at the workplace (see e.g., Agneessens & Wittek, 1998; Brass & Burkhardt, 1993; Krackhardt, 1990). First, drawing on the empirical work within the agency research stream, we suggest that individuals actively try to improve their power positions in an organizational context (Loch, Yaziji, & Langen, 2001). Consequently, individual differences in the abilities, skills, and in willingness to use those skills to acquire and exercise power are a necessary element in the investigation of informal power in organizations. The empirical findings regarding the strategic behavior effects discussed in Chapters 2 and 3 provide confirmation for the notion that power reputations at the workplace appear to be driven by *visibility*, and that visibility consists of an employee's overt dominant behaviors (Chapter 3) or an apparent lack thereof (as indicated by a preference to stay passive or rely on the support of the higher-ups in the organization – Chapter 2).

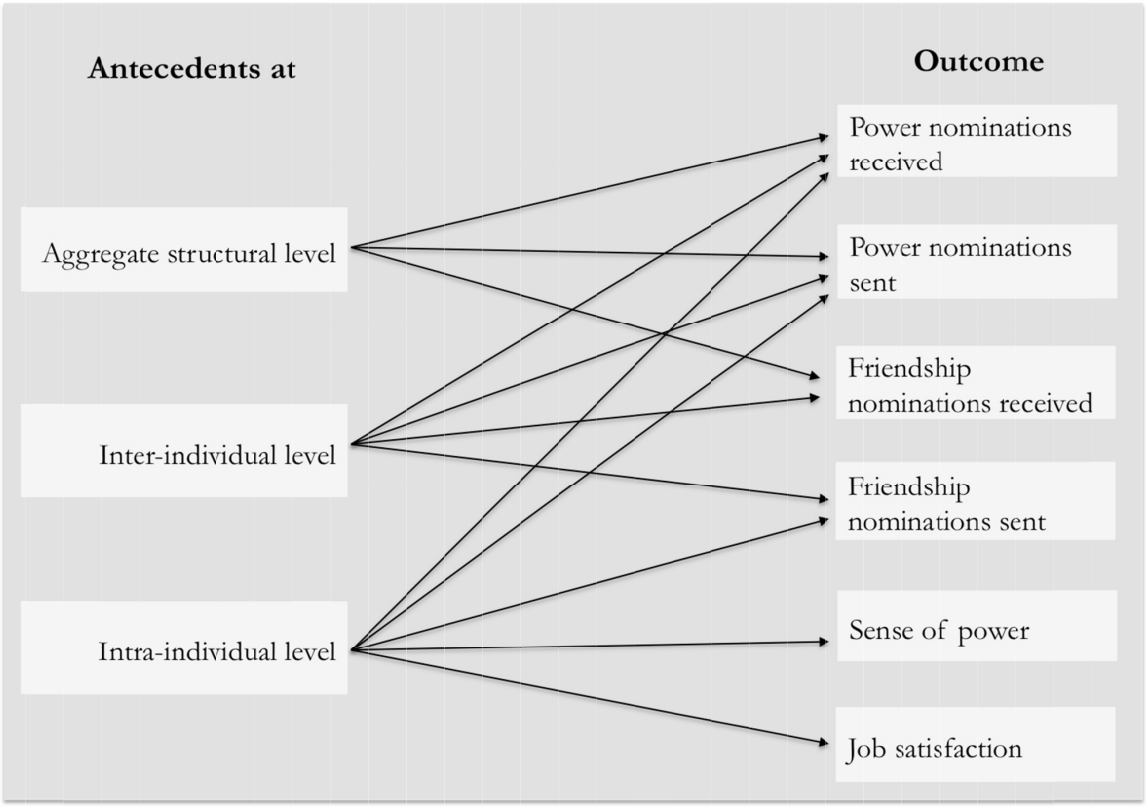
Second, network opportunities will not by themselves turn into power: for example, people who lack a salient gain goal may not be comfortable instrumentalizing social relations to further their own objectives, and may choose not to reap the potential profits (for example, by creating friendship ties to powerful group members). As demonstrated in Chapter 4, whether the dynamics of one relationship type will lead to a change in another relationship type depends on particular individual characteristics and strategic skills. The incorporation of individual differences in our model of multiplex relationship dynamics conveys novel insights that may also enhance the general power and accuracy of network dynamics theories.

Third, the constraint-driven approaches that have dominated the literature so far may have overlooked some important cognitive processes, including the evaluation and feelings of the actor towards both his own personal commodities and his social surroundings (e.g.,

Agneessens & Wittek, 2008). Shifting the focus from an actor's assessments of *others'* power to *self-perceptions* of power allowed us to explore the puzzling link between individual's subjective perceptions of organizational reality (generalized trust in colleagues), and his or her perceived well-being and satisfaction at work (Chapter 5). One major conclusion is that personal sense of power was a meaningful predictor of employee satisfaction, particularly in an atmosphere of low trust. Notably, organizations can significantly boost morale through empowering their employees, as individual position in the group and the associated subjective sense of power are among the fundamental requirements for psychological well-being.

Figure 1.1 provides a visual impression of the relationships tested in the four empirical studies on each analytical level. Table 1.2 gives a more detailed summary of the same information, using the original variable labels. Table 1.3 presents a verbal overview of all the hypothesized effects and the corresponding results.

Figure 1.1 *Visual Summary of the Tested Relationships on each Analytical Level*



Note. To avoid cluttering, the original variable names of the tested antecedents at the respective analytical levels are omitted from the graph.

Table 1.2 *Overview of the Relationships Tested on each Analytical Level*

Predictor (Chapter)	Power received	Power sent	Friend. received	Friend. sent	Sense of power	Job satisfaction
Aggregate structural						
In-degree (3)	**V**	**X**				
Betweenness (3)	**X**	**X**				
Closeness (3)	**X**	**X**				
Aggregate constraint (3)	**X**	**V**				
Power nominations received (2, 3, 4)	**V**					
Inter-individual						
Dyadic constraint (3)	**X**	**X**				
Interpersonal trust (colleagues) (2)	**V**					
Interpersonal trust (superior) (2)	**V**					
Friendship tie to the powerful (4)	**X**					
Power nominations sent (3, 4)			**V**	**V**		
Intra-individual						
Strategic behavior (2, 3, 4)	**V**	**V**		**V**		
Self-monitoring (4)		**V**		**V**		
Perceived trust (5)					**V**	**V**

Note. "V" stands for the significant relationships; "X" stands for the non-significant relationships.

1.3.4 Suggestions for Future Research

The research described in this dissertation improves our understanding of the specific social mechanisms related to the antecedents and consequences of informal power in organizational settings. Nevertheless, many questions remain unanswered, and warrant further investigation by organizational scholars. There are also several limitations that might have affected the results of our studies, and therefore need to be taken into account in future empirical research.

Firstly, the data for our studies have been collected in the work settings of two organizations: a German paper factory and a Dutch non-profit child-care organization. Our findings may therefore have been affected by the particular context of these settings. Organizational characteristics that may be less applicable in other contexts include the type of sector, size, formal structure, work atmosphere, and gender composition, as well as organizational developments during the measurement period. The study presented in Chapter 2 was based on data from a relatively small male management team of a hierarchically structured German paper factory. The changes that this particular organization went through in between the measurement waves may have generated particular patterns of interactions within the team. As pointed out by Burt (1992, p. 121), because informal networks are dynamic social constructions laid on top of the firm's formal structure, and because networks change when organizational activities change, the results of our study may have been affected in a unique manner.

The findings in Chapters 3, 4, and 5 are based on data from relatively similar departments of a Dutch child-care organization, operating in the social care sector. The respondents were mostly female pedagogic professionals, part of interdependent teams working closely together in a collaborative manner. In contrast to the paper factory, the work environment within this setting could be best characterized as very sociable, cooperative and non-competitive. On one hand, to assess generalizability our findings need replication within a broader range of organizational settings. On the other, we must emphasize that in contrast to earlier work which was bound to larger and more competitive settings in a for-profit sector (e.g., investment bankers; Burt, 2005), our focus on this particular organization gave us a unique opportunity to study the mechanisms underlying the generation of power reputation and well-being in a setting where status competition is not the driving force behind the relational dynamics. We were able to show that this type of organization is characterized by the existence of small, but nevertheless solid informal relations. Moreover, even in this cooperative work setting we found systematic evidence for variance in people's approach to building relationships. The effects identified in our studies were robust and relatively strong, suggesting that the processes reported here would be even more evident in a larger, more competitive, formal, hierarchically structured workplace.

Secondly, thanks to the relatively small size of the organizational departments participating in our studies, we could directly address the informal power relations among employees by presenting the respondents with a roster of the names of all employees working at the site (see also Brass, 1984; Pfeffer, 1981a). Future research, however, could examine power relationships between employees in a more controlled manner (e.g., by means of field observations or experiments) to supplement our reliance on sociometric ratings. This would allow us to understand more fully how power perceptions are signaled and communicated in the workplace.

Thirdly, future research may benefit from a different measure of individual strategic behavior tendencies. As was mentioned earlier, for the study in Chapter 2 the strategy questions referred to behaviors that respondents consider appropriate when dealing with cooperation problems, rather than influencing others (Chapters 3 and 4). The way the questions were formulated, and the choice of specific behaviors to be rated by respondents in different studies may have played a role. In all studies we used subjective measures to assess respondents' likelihood to engage in strategic behavior. We treated the obtained information on behavior intentions as a proxy for the manifestation of individual strategic behavior; however, we acknowledge that it is not precisely the same. To obtain a more comprehensive measure of participants' political skill and strategic actions, future research could benefit from including measures assessing a broader set of individual strategic abilities and actual, rather than intended behaviors.

Finally, previous studies urge that "the individual must be brought back in to acknowledge and account for the micro-foundations of structural research" (Kilduff & Krackhardt, 1994). They advocate that personality traits, like need for power and self-monitoring disposition could be crucial, although often neglected, elements in network models of power reputation antecedents (Brass & Burkhardt, 1993; Burt et al., 1998; Harms et al., 2007; Ibarra et al., 2005; Mehra et al., 2001). In line with this previous empirical work, the findings of the study reported in Chapter 4 revealed that an individual's relational skills and self-monitoring tendency are strongly related to their ability to recognize, and their motivation to exploit the advantages that specific network structures have to offer. Unfortunately, due to practical considerations regarding questionnaire length, the present study could not include additional personality characteristics. Further systematic examination of the influence of individual attributes on informal power dynamics in organizations is definitely warranted.

In conclusion, one of the contributions of this dissertation is the introduction of a dynamic integrative approach to the study of antecedents and consequences of employees' informal power in organizations. In the four empirical studies that make up Chapters 2 through 5 of this book, we have elaborated eight core mechanisms, and assessed the specific conditions under which one or other mechanism is activated. Moreover, the antecedents and consequences of informal power have been addressed through three levels of analysis: the standard aggregate structural level, which was further refined into the inter-individual and intra-individual directions. Most importantly, perhaps, the adopted approach allows the different theoretical perspectives to be combined in a single overarching framework that directs attention to the cognitive foundations of informal power. This provides novel insights regarding *visibility* as an encompassing mechanism underlying the antecedents and consequences of power in organizations. The ease of access to information about dominance is likely to play a far more important role in relational dynamics related to employee power

reputations than network scholars of power have argued thus far. The current inquiry also contributes to the advancement of research on power by using longitudinal complete network data collected in two contrasting real-life organizations, and applying the most recent innovative developments in quantitative social network analysis. We hope that the theoretical and empirical insights gained from our research will stimulate future investigations on this important and equally fascinating topic.

Regarding the general structure of this dissertation, it is important to mention that some overlap between the subsequent chapters is unavoidable because they were written as independent research articles. To allow independent reading of the chapters, we have retained the original format of the articles. The overlap applies particularly to the introductory, conclusion and methodological sections of the chapters; and in addition, there is inevitably some overlap between this book's introduction and the above-mentioned sections of the chapters.

Table 1.3 *Antecedents and Consequences of Perceived Informal Power (i.e., Power Reputation) in Organizations: Hypotheses and Empirical Evidence*

Mechanism	General Description	Empirical Evidence
CHAPTER 2 - Power Networks: The Effects of Reputation, Social Embeddedness and Power Strategies		
Reputation (Rational Imitation)	The more power ties a person has, the more likely he is to attract more power nominations.	*Hypothesis supported*: the higher the number of group members who perceive an actor as powerful, the more power nominations he attracts in the future.
Close personal tie (Social Embeddedness) **Reputation** ("Basking in reflected glory")	The stronger the interpersonal trust between the same-ranking colleagues (a), and the more he is trusted by high-ranking group members (b), the more likely a person is to be perceived as powerful.	*Sub-hypotheses (a) and (b) supported*: the more one trusts an actor, the more likely he is to perceive this actor as powerful; Being trusted by the formally powerful boosts other group members' power attributions to the actor concerned.
Reputation (Power Strategies)	The more direct (a) and indirect horizontal strategies (b), the more likely a person is to attract more power attributions; The more indirect vertical (c) and passive strategies (d), the less likely a person is to be perceived as powerful.	*No support for sub-hypotheses (a) and (b)*: Regarding direct and indirect horizontal strategies as appropriate did not significantly affect a person's power reputation; *Sub-hypotheses (c) and (d) supported*: The choice of indirect vertical and passive strategies detracts from one's power reputation.
CHAPTER 3 - Pathways to Power Reputation: The Interplay between Structural and Behavioral Mechanisms		
Structural Position (Structural Advantage)	The higher a person's structural power, the more likely he is to be perceived as powerful (a);	*Sub-hypothesis (a) supported* only for the *visible indicator* of structural advantage: A high degree centrality increases one's power reputation;
Allocation of more power to others	The lower a person's structural power, the more likely he is to attribute power to others (b).	*Sub-hypothesis (b) supported*: Individuals in a "weak" structural network position (i.e., high aggregate constraint) are more likely to attribute power to others.
Reputation (Power Strategies)	The more power strategies, the more likely a person is to be perceived as powerful.	*Hypothesis supported*: Strategic behavior boosts power reputation regardless of structural position in the informal social network.

CHAPTER 4 – The Dynamics and Co-evolution of Power and Friendship Networks in Organizations		
Receiving of more friendship ties from others (Gain)	If A perceives B as powerful, then A is more likely to befriend B.	*Hypothesis rejected*: Not everyone is equally inclined to befriend the powerful.
(Strategic Relational Skill)	Employees with better strategic relational skills will be more likely to befriend powerful colleagues.	*Hypothesis supported*: Employees with better relational skills are especially prone to befriend the powerful.
(Self-monitoring)	High self-monitors will be more prone to befriend the powerful.	*Hypothesis supported*: High self-monitors are especially prone to befriend the powerful.
Allocation of friendship by the powerful (Reciprocity)	If A attributes power to B, B is more likely to befriend A.	*Hypothesis supported*: Informally powerful group members, over time, befriend those who attribute power to them.
Reputation (Basking-in-reflected Glory)	The friends of people a person perceives as powerful will also come to be seen as powerful by that person.	*Hypothesis rejected*: Being friends with the powerful does not enhance power reputation in the group.
CHAPTER 5 - Disentangling the Relation between Interpersonal Trust, Personal Sense of Power, and Job Satisfaction: A Moderated Mediation Analysis		
Perceived trust in others (Simple Mediation)	Personal sense of power will mediate the positive relationship between trust in fellow colleagues and job satisfaction.	*Hypothesis supported*: An actor's level of trust in colleagues influences his sense of power, which in turn affects his job satisfaction.
More well-being (Moderated Mediation)	Trust will moderate the strength of the mediated relationship between trust and job satisfaction via personal sense of power, such that the mediated relationship will be stronger when the trust is lower.	*Hypothesis supported*: The indirect effect of the personal sense of power for the trust-job satisfaction relationship is strengthened by low levels of trust; hence, personal sense of power serves as a crucial motivator and a source of satisfaction especially for those employees who report low levels of trust in their colleagues.

Chapter 2

Power Networks: The Effects of Reputation, Social Embeddedness and Power Strategies

We develop and empirically test a model of the dynamics of perceived informal power in organizations. We argue that other actors' perceptions of one's informal power, one's personal ties to other organizational members, and the degree to which one regards certain power strategies as appropriate will contribute to how powerful one is perceived to be by others over time. We apply stochastic, actor-based models for network evolution to longitudinal social network data collected in the management team of an organization. Results show strong effects of imitation and interpersonal trust, and support for the negative effect of indirect vertical and passive power strategies.

This chapter is co-authored with Rafael Wittek, Rudi Wielers and Christian Steglich, and is currently in preparation for submission. Earlier versions of the article have been presented at the first International Conference on Reputation (ICORE'09): Theory and Technology, Gargonza, Italy; 104th American Sociological Association Meeting (ASA'09), San Francisco, California, USA; Quantitative Methods in the Social Sciences 2 (QMSS2'09): Networks, Markets and Organizations Conference, Groningen, The Netherlands. We thank the members of the WOT research group and the participants in the above-mentioned symposia for their input and valuable comments.

2 POWER NETWORKS: THE EFFECTS OF REPUTATION, SOCIAL EMBEDDEDNESS AND POWER STRATEGIES

2.1 Introduction

The purpose of this article is to develop and empirically test a model of differences in informal power attributions in organizations. Power has long occupied a central position on the research agenda of organizational scholars, who also acknowledge the importance of distinguishing between formal and informal power on one hand (Brass, 1984; Krackhardt, 1990), and objective and perceived power differences on the other (Bacharach & Lawler, 1976; Gioa & Sims, 1983; Fiol et al., 2001).

The literature on power in organizational settings is extensive, and researchers continue to disagree over the precise meaning and definition of power. Informal power has been variously defined as the ability to influence others and get things done (Brass, 1984; Emerson, 1962), to mobilize resources (Roberts, 1986), or to lead through "personal appeal" (Krackhardt, 1990). Power perceptions (Meindl et al., 1985; Pastor et al., 2002; Pfeffer, 1977) or power mental models (Fiol et al., 2001:225) refer to "organized mental representations of one's own and others' power". More specifically, reputational or perceived power has been defined as the set of beliefs others hold about how powerful an actor is (ibid).

Informal power and dependencies within an organization can be derived from a variety of sources, such as control over critical resources, or performance of important functions. However, it can be argued that interpersonal influence is a predominantly subjective relation, and can be assessed as such. Burt (1977) describes this subjective approach: "a manifestation of the distribution of power in a system of actors will be the network of influence and deference relations among actors in the system. Actor B is influenced by, defers to, actor A if B perceives A as being powerful relative to himself. The influence of one actor over another is the perception by the subordinate of the greater relative power of the superior" (p. 254). This line of reasoning is also consistent with the attributional nature of power (Dahl, 1957; Wrong, 1968). Following this established tradition in power research (e.g., Pfeffer, 1981a; Brass, 1984; Krackhardt, 1990; Brass & Burkhardt, 1993), the emphasis in this study is on the reputational (i.e., perceived) power induced through information flows in the informal network. We acknowledge that this use of the term "power" in this study is therefore rather specialized, and may not generalize to other conceptualizations and contexts.

Empirical research on power has typically followed two distinct patterns. On one hand, the focus has been on *power as related to one's formal position* in the organizational setting, to one's personal characteristics or behaviors, and to the (formal or informal) social ties one

has to other actors in the group. On the other hand, *power perceptions* have been studied. In any organization, some members appear influential in the eyes of others, whereas others may be perceived as powerless. From this perspective, power is a perceptual phenomenon based on attribution. An actor is powerful when seen as powerful by others, hence reputational measures of power are relevant. Our paper draws on these two different conceptualizations of power to model the antecedents and dynamics of perceived differences in informal power reputation.

There are several reasons why the study of the differences in power attributions is important. First, variations in power can have a tremendous impact on the success or failure of many organizational processes, including individual level, group level, and whole organization level outcomes. Deviations from formal lines of command can undermine the legitimate lines of communication and authority, and may thus be detrimental for the functioning of the organization. One individual with disproportionate influence can also have disruptive consequences on the team process by introducing an informal hierarchy. On the other hand, the emergence of capable informal leaders can be beneficial, and may help resolve problems resulting from imperfections in the design of the formal structure (Cross & Prusak, 2002; Krackhardt & Hanson, 1993). Influential individuals are likely to control resource flows and opportunities in organizations. Employees can reap rewards in terms of access to and control over diverse communications, distribution of ideas, and other valued resources throughout their immediate social circle by knowing how much and what kinds of power others have. Second, employees usually do not respond to objective power, but to the subjectively perceived power of other actors (Gioa & Sims, 1983). Hence, the formally powerful are not always the ones with the real power. Individuals in low-ranking positions may often be perceived as powerful, and therefore able to exert much more influence than formally powerful actors (Aghion & Tirole, 1997; Ibarra, 1993). Third, in complex organizations, even formal power concerning specific issues or domains is not always clearly defined. Reputation may be most important when objective information on an actor's behavior is scarce or absent (Sharman, 2007). Employees will make use of behavioral, structural, and situational cues in order to infer who is powerful.

Despite the attention that has been paid to informal power and power attributions separately, efforts to model the antecedents and dynamics of perceived differences in informal power reputation have been surprisingly scarce. Research on power attributions has so far focused on the determinants of subordinates' perceptions of managerial power (Bacharach & Lawler, 1976; Gioa & Sims, 1983), and has not addressed the question of how peers evaluate informal power differences among subordinates rather than between subordinates and superiors. Furthermore, most research on informal power has been cross-sectional in nature, meaning that little is known about how power attributions change over time.

Our study addresses the following two questions: Why are some members of an organization perceived to have more informal power than others? And, which factors affect the stability or change of perceptions concerning someone's informal power position? Building on previous research in the field of social networks and power strategies, we argue that (changes in) informal power attributions are driven by others' perceptions of an actor's informal power (i.e., his power reputation), his social embeddedness, and his judgment concerning the appropriateness of certain power strategies.

In the following section, we elaborate the theoretical background and derive testable hypotheses. In section three we describe the design of the research and the types of data collected, and in section four we present our results. We conclude by discussing the implications and limitations of this study, in section five.

2.2 Theoretical Background

A crucial question for actors in organizations is how to assess who has power in their social environment. Organizational settings are often characterized by a great deal of ambiguity (Milliken, 1987): there is always some uncertainty about whether or not an employee is actually powerful. In order to evaluate the relative informal power of any actor, then, individuals need to make use of both direct and indirect cues about the actor's position. *Direct* cues can be drawn from personal observations of the actor's behavior towards oneself or others. For example, observing how a colleague successfully influences others in my team may affect my perception of this colleague's informal power. *Indirect* cues can come from information provided by others concerning an actor's informal power. For example, my assessment of a colleague's informal power may increase if my team mates regularly refer to her as the one who succeeded in getting her ideas implemented. More specifically, previous research identified three core mechanisms accounting for the emergence of differences in informal power attributions in uncertain environments: rational imitation, social ties and strategic behavior. We address each of these in turn.

2.2.1 Rational Imitation

Informal power differences and status hierarchies emerge in bilateral interactions between group members (Gould, 2002). Even in relatively small groups, there are limits to the horizons of observability (Friedkin, 1983): in uncertain environmental conditions, group members cannot directly observe all interactions, and there is not enough information about the ongoing events and activities (Milliken, 1987). People often work in distinct groups, and thus participate in different social worlds. The members of an organization may be unaware of the social relations between its other members, and the extent to which a particular actor is influential in such relationships. In addition, power differences between exchange partners can change over time. Uncertainty about the relative distribution of informal power is the

result: individuals have only partial information about an actor's relative position towards other members in the group. Individual judgments in this ambiguous situation are generally more open to the influence of others, so one way to cope with the uncertainty is to rely on the power attributions of other actors in the system. Theoretical approaches ranging from rational choice (Hedstrom, 1998) and game theory (Barrera & Buskens, 2007) to Neo-Institutional organization theory (DiMaggio & Powell, 1983; Wittek, 2003) have pointed towards imitation as a viable strategy for dealing with uncertainty. Most of this research refers to assessment of trustworthiness of exchange partners. We propose that imitation will also be an important strategy driving the power attribution process in groups.

As suggested by Mehra and colleagues (2006), social networks serve a dual purpose in organizational settings. They function as information conduits, providing organizational members access to information. They also channel information about organizational members to others in the group: "The network that filters information coming to you also directs, concentrates, and legitimates information about you going to others" (Burt, 1992, p.14). Following this argument, we also assume that information about power attributions is diffused and dispersed within a particular social group.

In assessing an individual's performance, organization members search for signals of quality (Spence, 1973) in an ongoing social comparison process (Festinger, 1954). Furthermore, in judging an actor's reputation, individuals are likely to look for cues and associations from others in the group (Sharman, 2007). They therefore scan the environment for potentially useful information on (changes in) the relative power position of other group members, and on inferences and judgments of group members' power formed and made by others. This information can reach them through direct or observed interpersonal interaction, or indirectly via the grapevine, i.e. through communicating with others. We theorize that it then serves as a basis for their own power attributions. It is thus more likely that one would recognize and attribute power to people with a large number of power attributions from others in the group.

> *Hypothesis 1 (Rational Imitation)*: *The higher the number of group members who perceive an actor to be powerful within the group, the more likely it is that ego perceives this actor as powerful.*

2.2.2 Interpersonal Ties

Another determinant of informal power can be direct personal ties to others. We emphasize personal ties since they are usually characterized by mutual trust and respect. Organizational members who have a personal tie with each other are more likely to trust each other, and hence share valuable information and advice. Furthermore, a personal tie to an actor can be an especially useful source of more complete information concerning the actor's social relations to other group members, as well as the degree of influence he or she has in such relationships. The more I trust, the more likely I will be to form a positive

impression of this person, and the more I will be disposed to believe this person's accounts relating to interactions with third parties (Hess & Hagen, 2006). Previous research has also suggested that individuals in organizations see themselves as more popular than they actually are (Kumbasar et al., 1994). This bias is likely to play a role in organizational communication with trusted alters. Persons linked to an actor by an interpersonal trust relationship have a higher likelihood of being exposed to this actor's (biased) accounts of social influence attempts. With interpersonal trust increasing the willingness to believe the trusted person's accounts, power attributions between persons linked by an interpersonal trust relation are more likely than power attributions to persons with whom no interpersonal trust relation exists.

Hypothesis 2a (Interpersonal ties): The stronger the interpersonal trust between an individual and another actor, the more likely it is that he or she will perceive this actor as powerful.

Certain employees may have a direct personal tie to high-ranking organization members. From the balance theory perspective (Heider, 1958), someone perceived to be linked to a positively valued other is themselves more likely to be perceived positively. A study by Kilduff and Krackhardt (1994) investigating the determinants of performance reputation in organizational labor markets has demonstrated that an individual's reputation is partly a function of their having a prominent friend: friendship links to prominent others (as perceived by other organizational members) boosted individual's performance reputations. Building on these findings, we suggest that power reputations of people who are perceived as trusted by prominent others (e.g., by someone in a higher formal position) may also benefit from the other group members' awareness of the existence of this link. As was argued above, power attribution is a cognitive process that unfolds within a social context. A person's informal power can often be difficult to assess, so people tend to look for signals that will help them infer who is powerful. In this cognitive assessment process, being trusted by a prominent other may serve as a useful clue.

Hypothesis 2b (Trust from high-ranking actors): The more an actor is trusted by high-ranking organization members, the more likely it is that others will perceive this actor as powerful.

2.2.3 Power Strategies

Behavioral cues are a third potential indicator of an individual's informal power. An individual's behavior has indeed been shown to play a significant role in affecting power perceptions (e.g., Hinkin & Schriesheim, 1994). Drawing on both reinforcement and exchange theory, Brass and Burkhardt (1993) argue that engaging in behaviors that exhibit power strategies enhances an individual's reputational power. Power strategies are a means through which an individual tries to accomplish his or her personal goals in a social environment, such as enhancing and maintaining his or her hierarchical position (Kyl-Heku & Buss, 1996; Lund et al., 2007). The use of power strategies may in itself be regarded as a

source of power, and hence is positively related to perceptions of power (e.g., Brass & Burkhardt, 1993; Gioa & Sims, 1983).

Building on the distinction between direct, indirect and passive power strategies (Morrill & King Thomas, 1992), we elaborate upon two competing mechanisms. The first mechanism emphasizes affective motives and the importance of *direct*, bilateral strategies. Power strategies based on negotiation and persuasion (e.g., direct discussion, use of logical arguments) help to create and reinforce interpersonal bonds, as well as build and reproduce interpersonal trust. Furthermore, by regarding the direct strategies as appropriate, an individual signals concern for the other and the relationship. According to this perspective, employees who consider direct power strategies as appropriate are more likely to elicit cooperative behavior from others, thereby building a reputation as someone who gets things done and can be trusted. This preference for direct strategies will be positively related to the actor's power reputation. We assume that regarding these strategies as appropriate increases the likelihood that one will actually engage in direct, bilateral strategic behavior, and will therefore be perceived as more powerful by others. Furthermore, it is assumed that in relatively small groups where the members have known each other and for a long period of time, everyone has had sufficient opportunity to learn everyone else's views concerning strategy appropriateness.

Hypothesis 3 (Direct power strategies): The stronger an actor's tendency to consider direct power strategies as appropriate, the more likely it is that ego perceives this actor as powerful.

The second perspective emphasizes instrumental motives and the importance of brokerage for power acquisition. Actors in brokerage positions need to engage in brokerage behavior to reap the benefits of their social network. Employees who consider *indirect*, trilateral power strategies (e.g., gossiping) as appropriate are more prone to manipulate information, and exploit information asymmetries, thereby enhancing their reputation as a person who is able to get informal support. This preference for indirect strategies will be positively related to the actors' power reputation. Regarding these strategies as appropriate increases the likelihood that one will actually engage in indirect, trilateral strategic behavior, and as a result will be perceived as more powerful by others.

Hypothesis 4a (Indirect horizontal power strategies): The stronger an actor's tendency to consider indirect power strategies as appropriate, the more likely it is that ego perceives this actor as powerful.

Existing research has mostly suggested that the preference for *indirect vertical* (formal) strategies that involve high-ranking organization members as a third party signals association with "winners", i.e. with the successful and the powerful. It is assumed that individuals who consider this type of strategy to be appropriate become reputed to be associated with the high-status group members. The extent to which an actor regards invoking powerful others as an acceptable strategy for getting things done can therefore contribute to the perceived connection between the actor and the formally powerful. It has previously been shown that

individuals' personal reputations can be enhanced by the mere perception that one is socially connected to prominent others (e.g., Kilduff & Krackhardt, 1994). By basking in the superiors' reflected glory, an individual may build a reputation as a powerful actor (Pfeffer & Fong, 2005). However, these studies fail to capture the possibility that indirect strategies involving superiors can also be detrimental for one's power reputation among other employees. Past research has shown that in certain circumstances (e.g., uncertainty, distrust, negative attitudes between various organizational members) the "basking-in-reflected-glory-effect" may work in reverse, and that being perceived as having connections to formally powerful individuals might actually detract from one's reputation (e.g., Mehra et al., 2006). Building on this argument, we theorize that whereas having the trust of higher-status others may signal one's ability to influence them, relying on the added authority of someone in a higher formal position may actually signal one's inability to get things done, and may destroy interpersonal trust. In this case, the preference for indirect strategies involving superiors will be negatively related to the actors' power reputation: the more one regards getting things done indirectly through the assistance of the higher-ranking organizational members as appropriate, the less powerful he will be perceived to be by others.

Hypothesis 4b (Indirect vertical power strategies): The stronger an actor's tendency to consider indirect vertical power strategies as appropriate, the less likely it is that ego perceives this actor as powerful.

Employees who consider *passive* strategies (e.g., resignation) as appropriate are less likely to elicit cooperative behavior from others, and are less able to reap the advantages that can be derived from the social network of an organization. Furthermore, the preference for this type of strategic behavior may signal one's inability to bring together social contacts (e.g., to mobilize a coalition) when this is likely to generate some advantage, thus detracting from one's own reputation as someone who is able to influence others and get informal support. Hence, we assume that the preference for passive strategies will be negatively related to the actors' power reputation. The more one regards passive strategic behavior as appropriate, the less powerful he will be perceived by others over time.

Hypothesis 5 (Passive power strategies): The stronger an actor's tendency to consider passive power strategies as appropriate, the less likely it is that ego perceives this actor as powerful.

2.3 Empirical Setting and Data

Investigating the mechanisms behind the evolution of informal power attributions in organizational settings requires sociometric data. It also requires a setting in which some substantial change in the formal and informal interaction patterns has taken place. Network panel data (four measurements with six months intervals between each wave) that were collected from the members of the management team of a German Paper Factory from late 1995 until mid-1997 (Wittek, 1999) meet these criteria.

2.3.1 The Organization

The organization was based in a village of 800 inhabitants in southern Germany. It had seven departments: production, the chemical lab, maintenance, logistics, personnel, technical customer service and a project department. The management team consisted of the COO, department heads, assistants to the department heads, and junior engineers reporting to the department heads (see Wittek, 1999, pp. 79-86 for a detailed description of the formal structure of the management team throughout the measurement periods). There were 17 male managers with a mean age of 40.53 (range: 28-51; *SD* = 10.19) who had on average been employed in the paper factory for 12.59 years (*SD* = 11.8; *Mdn* = 7; *minimum* = 1, *maximum* = 41). Two-thirds of the managers had a degree in engineering.

The team was characterized by stable membership, frequent unscheduled horizontal and vertical communication, and weekly meetings. Evidence from participant observation and a survey confirms the self-perceptions of the team members as a highly solidary work unit operating on the basis of trust rather than hierarchical control (see Wittek, 1999, pp. 86-100, 122-134). All the managers described their team as a "trust culture".

When fieldwork started in 1995, the factory had 170 employees and two paper machines. After a bankruptcy in 1993, the company had been taken over by a German multinational, which decided to invest 40 million German Marks to enlarge the site by adding a new production hall and a third paper machine. The latter was scheduled to be operative on 1 September 1995. This project and the realization of the deadline of 1 September 1995 comprised the most significant event in the factory throughout the observation period.

To describe the organizational context of the paper factory, three different phases must be distinguished, each with a different type of formal structure and pattern of functional interdependence. During the first phase (1995), the managers had to cope with a double workload: in addition to their role in the daily production process, they were now also responsible for the successful realization of the common project. Mutual interdependence between the managers and the necessity to coordinate and cooperate reached previously unknown heights, and during this phase a clear group goal was present. With the successful completion of the project at the end of 1995, the common group goal disappeared, although the production department still formed a single entity. After the activation of the new machine, a number of major changes took place in the formal organization of the factory (phase 2, 1996). First, while the COO was on a vacation the high ranking executives in the mother company decided that he would no longer be formally responsible for the production process at the factory (first week of March, 1996): instead, one of the general managers would take over. Most employees at the factory had considerable reservations about this decision. The management team collectively rejected the decision by the COO's superior, and refused to work under new direction. Eventually, the

general management gave in and the COO retained all his responsibilities. These external political attacks on the factory team resulted in a loss of trust in general management, considerable confusion among the team members with regard to the task structure and allocation of responsibilities, a drop in work motivation and morale, and a heightened feeling of job insecurity. Finally, in December 1996, the production department was split up into three semi-autonomous units. As a result, in 1997 (phase 3) clarity in the formal structure was reintroduced, team members' responsibilities and the future distribution of credit were clearly allocated and defined, and the chaos and confusion was resolved (see Wittek, 1999, pp. 86-117).

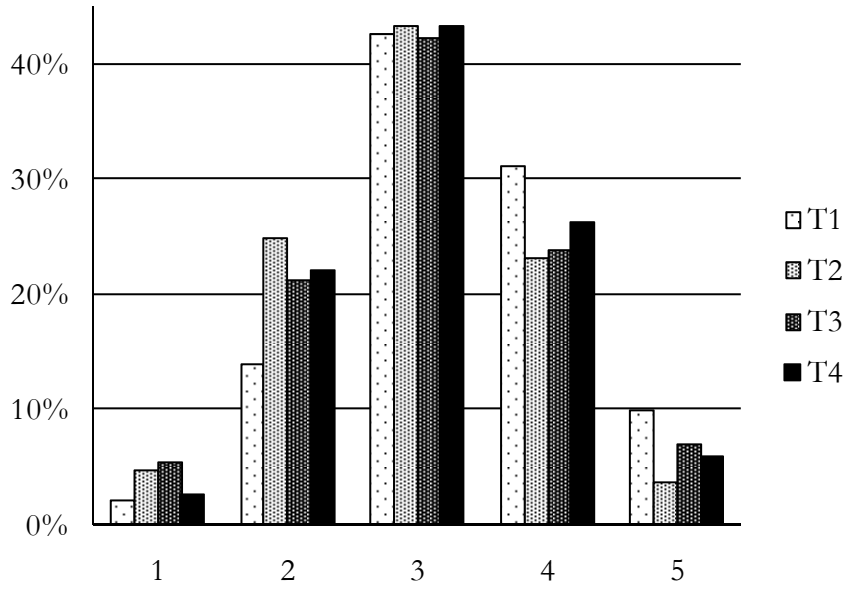
2.3.2 Measures

We describe the variables according to the roles they play in our analysis, as dependent variable (power attribution), predictor variable of interest ('independent variables'), and control variables. This latter group comprises a mix of technical controls (period dummies), exogenous variables such as the formal job hierarchy, and endogenous network effects such as the potentially existing reciprocation tendencies in the power attribution network.

Dependent Variable

The reputational power network. Because power is in part an attributed property, reputational measures of power are frequently used in studies of power in organizations and have been previously shown to relate to objective measures such as promotions (Brass, 1984; Pfeffer, 1981a). Individual power was assessed at all four measurement points by asking each respondent to indicate on a 5-point Likert scale ranging from 1 (very little influence) to 5 (very much influence) how much influence each colleague (from the presented name list) has in the work activities of the factory. Following Brass (1984) and Pfeffer (1981a), the question was worded as follows: *"In each team there are members who – due to their personality or experience – have more influence on collective decisions than others. Through their enthusiasm or charisma they succeed more often than others to convince their colleagues about their ideas, and to get their ideas implemented. In your opinion, how much influence does each of the colleagues in the following list have (including yourself)?"* In Figure 2.1, the distribution of reputational power over time is shown as the percentage of respondents' ratings of their colleagues' power.

Figure 2.1 *Distribution of Power Attribution (i.e., Reputational Power) over Time.*



Note. Percentages refer to off-diagonal cells in the 17×17 adjacency matrix; categories range from 1 (very little influence) to 5 (very much influence).

Independent Variables

Current power position. As a measure of the extent to which the actors who are already perceived as powerful might attract more power attributions from others over time (popularity of alter effect), we used each individual's current power position as attributed by other group members. The mechanisms examined in this paper focus on dynamic changes in power reputation over time, hence current power position is taken into consideration as a predictor of each individual's power attribution (i.e., we include an endogenous, contemporaneous effect of current power position).

Interpersonal trust. The sociometric information on interpersonal trust was collected at four points in time using the standard network survey question: *"We all feel closer to some colleagues than to others. By "closeness" we mean how strongly you trust a specific colleague. For example, who do you confide important personal information (private or work related) to? Please indicate on the following list of colleagues, which of the descriptions comes closest to your relationship with this colleague."* As is typical in network research, the answer categories were: "Person not known to me", "Distant – you would not confide even unimportant personal matters to this person", "Neutral – you do not know this person well enough to confide personal matters to him", "Strong – you confide matters to this person that are relatively important to you" and "Very strong – you confide matters to this person that are very important to you".

Power strategies. Four types of power strategies were measured: direct, indirect horizontal, indirect vertical (formal) and passive. They were measured at time points one and

three. The question referred to how respondents dealt with cooperation problems: *"There are many ways how people deal with cooperation problems. How appropriate do you, personally, consider each of the following behaviors?"*. This question was followed by twelve statements, six of which are used in our analysis.

Two items captured *direct strategies*: bilateral arguing ("To speak to the other person in private") and public negotiation ("To discuss the problem during a meeting"). We then distinguished between two types of indirect strategies. *Indirect horizontal strategies* were addressed by the following item: asking opinion of others ("Asking other colleagues' opinion about the person's behavior"); in *indirect vertical strategies* the third party is someone with formal authority over the actors, and this strategic action is tackled by the following item: complaining to a superior ("To complain to the manager over colleague"). Two items captured *passive strategies*: retaliation ("To pay the person back with his own medicine") and resignation ("To keep one's anger for oneself and do nothing").

Respondents were asked to rate the appropriateness of each strategy on an interval scale ranging from -100 per cent "inappropriate" to +100 per cent "appropriate" on a bipolar scale (recoded into scores between -1 and +1 for the analysis). Since the strategy items were measured only at time points one and three, the values at time point two were imputed by the carry-forward method (i.e., using the first observation values). Because the strategy items figure in the analysis as independent variables in a continuous time model, their values at the last observation moment are unimportant, so we did not need to impute these.

Control Variables

Formal status. Because earlier research has shown that one's formal position can have an effect on power attributions (e.g., Krackhardt, 1990; Tushman & Romanelli, 1983), formal status was added as a control variable. We included two types of variables representing an individual's formal status in the setting under study. The dyadic variable controlled for the effect on power reputation of being ego's direct supervisor. Information on each manager's relatedness in the formal job hierarchy network was assessed based on the organizational chart: the dyadic variable was coded as "1" if the respondent was a supervisor of another person in the network, and "0" otherwise. In addition, we were interested to see whether generally occupying a higher-ranking position in the group (i.e., supervising many others) boosts an actor's power reputation. Therefore, we defined the overall formal status in the group as the number of subordinates each manager had, and included it as an additional control variable in the model.

Difference between periods. Ethnographic evidence on the organization showed that between the first (December 1995) and the third measurements (December 1996), some major changes in the structure had been implemented, seriously affecting the site managers' power position, and also leading to substantial changes in the informal relations. To account

for this, expected time period heterogeneity dummy variables for periods one and three were included in the model.

Average trust received. This variable controlled for the effect on power reputation of being trusted by many others. Using the sociometric information on interpersonal trust, we calculated the average rating for each person, eliminating the self-assigned ratings.

Communication. The intensity of communication between the two actors in the dyad was included to control for the effect that communicative relationships may have on power attributions. The sociometric information on communication was collected at four points in time by asking the respondents to indicate on a 5-point scale how frequently they had communicated with each of their colleagues at the workplace during the last three months. Response categories ranged from "never" to "daily".

Structural effects. These refer to parameters that describe the overall structure of the dependent variable – power attributions in the network as a whole. These parameters are known as "network statistics" and they indicate whether certain patterns of power attributions occur more or less often than would be expected by chance. For example, we controlled for the possible effect (1) that actors might attribute power to those others that attribute power to them, and might refrain from attributing power to those who do not reciprocate their power attributions (*reciprocity effect*); (2) that actors might start attributing power to those others who are perceived as powerful by those whom they already perceive as powerful (*transitivity effect*).

2.4 Method

To test our hypotheses, we analyzed our data with a variant of stochastic actor-based network evolution models (Snijders, 2001, 2005; Snijders et al., 2010). In its original presentation, this model family was formulated for binary networks. The extension we use here allows to analyze valued, Likert-scale, ordinal network data. This means that the available information can be processed much more efficiently, particularly when using small valued data sets such as ours, because the data need not be binarized. We restrict our discussion of the model to the crucial differences between the original, binary formulation and the extended, valued one we make use of. For a more detailed description of the whole modeling approach, we refer the reader to Snijders and colleagues (2010), who provide a comprehensive introduction.

2.4.1 Stochastic Actor-based Models for the Evolution of Valued Networks

At the heart of the actor-based modeling approach stands the assumption that the totality of observed differences in the dependent network between two consecutive observations results from an unobserved sequence of small network changes made by the actors. These changes are called *micro steps*. Their occurrence rate for each actor is modeled

by a rate function, and the outcome of the actor's network changing decisions is modeled by an objective function.

Micro steps. In the binary case, the elementary changes that an actor can make consist of the swapping of one of his outgoing binary tie variables, i.e., he can decide to terminate an existing relation, or initiate a new one. In the valued case, a micro step consists of the movement to an adjacent category on the network scale. On the 5-point power attribution scale, an actor *i* who considers another actor *j* to be of average influence (say, $x_{ij} = 3$) can increase this value to $x_{ij} = 4$, or decrease it to $x_{ij} = 2$. Upon reaching the lower ($x_{ij} = 1$) or upper end ($x_{ij} = 5$) of the scale, an additional micro step would need to be taken by the same actor *i*. In stochastic actor-based modeling, this type of micro step is also used when analyzing co-evolving behavioral properties for the actors, which are typically also measured on a non-binary but ordinal scale.

Rate of change. The rate of change between two observations of the dependent network indicates how often an actor gets the opportunity to take a micro step. As such, it models the total amount of change between these observations. In binary networks, the latter is expressed by the Hamming distance of the two networks, i.e., the number of off-diagonal cells on which the corresponding binary adjacency matrices do not coincide. For valued networks, we formally replace the Hamming distance by the sum of off-diagonal cell-wise absolute differences between the two matrices. In the analyses reported below, we assume that rates of change do not differ between the actors (a common assumption in actor-based modeling). For this simple specification of the rate function, no further differences between the binary and the valued model need be addressed.

Objective function. The objective function evaluates any possible configuration of the dependent network *x* from the perspective of a focal actor *i*. When an actor has the opportunity to make a micro step, all possible micro steps that he could take in this situation are evaluated by this function, together with the option to not take any micro step and maintain the status quo. These evaluations are then transformed into choice probabilities that in turn are used to determine which of the possible courses of action the evolution process will take. For both binary and valued networks, the objective function is a weighted sum of network statistics that capture key characteristics of the focal actor's position in the network. Formally, the function has the shape $f_i = \sum_k \beta_k s_{ik}(x)$, where the parameters β_k are estimated from the data. These estimates express the degree to which actors *i* show evidence for shaping their personal network to display those features numerically summarized in the corresponding statistics $s_{ik}(x)$.

To make this a bit more concrete, consider the statistic $s_{i,\mathrm{rec}}^{\mathrm{binary}}(x) = \sum_j x_{ij} x_{ji}$, which in the binary model expresses the *reciprocity effect*. The statistic counts the number of reciprocated relationships that actor *i* has in the network. When the actors strive to have

reciprocated rather than unreciprocated relationships to their network neighbors, the corresponding parameter β_{rec} would be estimated as positive. For the valued model, it is not always straightforward to formulate statistics that correspond to the binary intuition. Here we follow a suggestion by Onnela and colleagues (2005) and take the geometric mean of the relation variables involved in the binary statistic, which is $s_{i,\text{rec}}^{\text{valued}}(x) = \sum_j \sqrt{x_{ij} x_{ji}}$ (note that if the network is binary, this formula gives the same result as the one given earlier). The definition of the network statistics is the only aspect in which the binary and the valued objective functions would differ. Because they are crucial for understanding and interpreting the estimates, the effects used in the empirical analysis and their formulae are provided in more detail.

2.4.2 Model Specification for the Analysis

The specific choice of objective function statistics for our analysis is as follows. Similar to the way ordinal behavioral scales typically are modeled (see Snijders et al., 2010), two shape effects are included. The *linear shape parameter* plays the role of an intercept, and models average power attribution in the network evolution process. The *quadratic shape parameter* controls for under-dispersion (regression to the mean, when the estimated parameter is negative) or over-dispersion (polarization, when the estimated parameter is positive) of the network variable. Together, they control for distributional features of the dependent network variable; their statistics are $s_{i,\text{linear}}(x) = \sum_j x_{ij}$ and $s_{i,\text{quadratic}}(x) = \sum_j x_{ij}^2$. Because power attribution follows a unimodal distribution (see Figure 2.1), regression to the mean (a negative quadratic shape parameter) is what would be expected. The effect statistic included as operationalization of the rational imitation hypothesis is $s_{i,\text{H1}}(x) = \sum_{jk} x_{ij} x_{kj}$, which measures the degree to which popular actors *j* (i.e., those receiving high reputation from other actors *k*) are also attributed power by *i*. Hypothesis 2a refers to a dyadic main effect of an exogenous network variable. The degree to which such an exogenous network *w* coincides with the power attribution network is expressed in statistics $s_{i,\text{H2a}}(x) = \sum_{jk} x_{ij} w_{ij}$; analogous dyadic main effects are included to control for the effects of communication and bilateral formal hierarchy on power attribution. Hypotheses 2b, 3, 4a, 4b and 5 all refer to main effects of an exogenous individual variable *v* on being attributed power. The effect statistics $s_{i,\text{H2b,3,4a/b,5}}(x) = \sum_{jk} x_{ij} v_j$ express such an alignment; analogous effects are used included to control for formal hierarchy as measured in the number of subordinates, general trustworthiness, trustworthiness to high-ranking actors, and the dummy variables with which we controlled for time heterogeneity. Finally, next to reciprocity (introduced above), transitive closure of power attribution was also controlled for; the corresponding effect statistic in the binary case was again a subgraph count, and therefore made use of the geometric mean of the relational variables involved in the subgraph: $s_{i,\text{trans}}(x) = \sum_{jk} \sqrt[3]{x_{ij} x_{jk} x_{ik}}$

Power attribution is potentially transitive, i.e., an actor might attribute power to the recipients of power attributions by those persons he already attributes power to. Whether such a residual endogenous effect can still be found when all other mechanisms of power attribution are also included in the model remains to be seen.

2.5 Results

Table 2.1 presents several descriptive statistics. The average levels of the outgoing / incoming power attributions and trust show the substantial change in informal interaction patterns that occurred in the organization during the fieldwork period. For example, a decrease in the average level of incoming trust from 3.10 to 2.92 shows the collapse of the trust network between the first and the third measurement. As can be seen from the small increase in average incoming trust, from the third time point trust was slowly re-established. These statistics are consistent with the ethnographic observation presented previously (see Wittek, 1999). Interestingly, power attributions vary more with the receiver than with the sender of the relation, while for trust the opposite holds.

The mean statistics of power strategies suggest that public negotiation is considered to be the most appropriate means of dealing with cooperation problems, whereas retaliation appears to be the least appropriate strategic behavior. At this aggregate level, the ordering of the six strategy items did not change over time, but inter-item differences in appropriateness became smaller.

Table 2.1 *Descriptive Statistics of Actors (n=17). Average Levels (Means) and Heterogeneity Indicators (Standard Deviations) of Average Outgoing/Incoming Power Attributions, Trust and Strategy Appropriateness*

		Time point 1		Time point 2		Time point 3		Time point 4	
		M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Power attribution	out	3.13	(0.29)	2.79	(0.47)	2.88	(0.41)	2.91	(0.30)
	in		(0.62)		(0.50)		(0.63)		(0.55)
Trust	out	3.10	(0.50)	2.98	(0.47)	2.92	(0.46)	3.02	(0.43)
	in		(0.36)		(0.22)		(0.30)		(0.32)
Bilateral arguing		0.49	(0.44)	-		0.28	(0.56)	-	
Public negotiation		0.60	(0.37)	-		0.32	(0.35)	-	
Asking opinion of others		0.41	(0.50)	-		0.18	(0.40)	-	
Complain to superiors		-0.28	(0.51)	-		-0.22	(0.45)	-	
Retaliation		-0.92	(0.19)	-		-0.88	(0.13)	-	
Resignation		-0.72	(0.38)	-		-0.62	(0.55)	-	

Table 2.2 summarizes the results of the analyses[1]. We will first address the results for the control variables, and then those pertaining to our hypotheses. We refer to the parameters by their numbers in the Table. Rate parameters refer to exponential distributions of waiting times; the other parameters refer to multinomial logit discrete choice models, and as such are comparable to logistic regression coefficients. To compare effect sizes, the different scaling of the predictor variables needs to be considered, and odds ratios can be calculated to give impression of what estimated choice probabilities look like. In the table we simply present the raw coefficients, which can be interpreted as the predictor variables' contribution to the log-odds of increasing power attribution in a given sender-receiver pair vs. not increasing it.

The network rate parameters indicate that the highest estimated average amount of change per actor occurred between the second and the third time point at which the power network was observed (period 2). The significant dummy effect for period one (6) suggests that the changes in responsibility imposed on the organization had a major effect on overall perceived power in the study group. We also controlled for actors' relatedness in the formal job hierarchy network (12) in the organization, and for overall formal status (22). There was a positive effect of attributing power to actors who occupy a high-ranking position in the organization (i.e., have a high number of subordinates), however the effect of ego attributing power to his direct superiors was not significant. An actor's overall formal status in the group positively contributed to his power reputation, while the hierarchical (direct) superiority over ego had no additional effect. In addition, the control variable communication (13) had a positive marginally significant effect (at the 10% level), suggesting that intensive communicative relationship between ego and another actor may positively contribute to this actor's power reputation. Furthermore, the negative average trust received effect (20) indicated that employees were less likely to attribute power to those who were trusted by many other colleagues. This negative estimate is counterintuitive, but needs to be considered together with the positive estimates of other trust-related effects; we do not discuss it further here. Finally, the insignificant reciprocity (9) and transitivity (10) effects are also noteworthy. These indicate that after controlling for all other effects in the model, there was no residual tendency to attribute power to those who attributed power to ego previously, as well as no tendency for ego to attribute power to colleagues who were perceived as powerful by those whom ego already perceived as powerful.

[1] Table 2.2 summarizes the results of the parameter estimates derived from the analyses performed using the *SIENA* software for valued ties. To check robustness, we also estimated the same model with a dichotomized reputational power measure. For this purpose scores ranging from 1 to 3 were coded as "0" and scores ranging from 4 to 5 were coded as "1". The pattern of results was the same in both analyses; hence we are confident in the effects detected.

Table 2.2 *Informal Power over Time. Parameter Estimates and Standard Errors (SE) for Network Dynamics – Valued Ties Analyses*

			Model		
Control variables			*Estimate*	*SE*	*Sig.*
1. Network rate parameter (period 1)			24.85	5.74	
2. Network rate parameter (period 2)			34.38	10.09	
3. Network rate parameter (period 3)			22.64	4.72	
4. Shape out-ties (linear)			0.15	0.23	
5. Shape out-ties (squared)			-0.50	0.05	***
6. Dummy period 1			-0.34	0.08	***
7. Dummy period 3			0.04	0.08	
Endogenous network effects					
8. Popularity of alter			0.02	0.01	**
9. Reciprocity			-0.28	0.34	
10. Transitivity			0.13	0.19	
Exogenous network effects					
11. Trust			0.32	0.05	***
12. Formal position (direct superior)			0.14	0.21	
13. Communication			0.07	0.04	+
Actor (alter) attributes - strategy use					
14. Direct		- Bilateral arguing	0.03	0.09	
15.		- Public negotiation	-0.01	0.12	
16. Indirect	(horizontal)	- Asking opinion of others	-0.10	0.07	
17.	(vertical)	- Complain to superiors	-0.17	0.08	*
18. Passive		- Retaliation	-0.96	0.23	***
19.		- Resignation	0.10	0.09	
Other alter characteristics					
20. Average trust received			-0.55	0.22	*
21. Average trust received from superiors			0.31	0.10	***
22. Formal status (number of subordinates)			0.17	0.05	***

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Turning to the hypotheses, the popularity effect (8) captures the idea that the more group members perceive an actor as powerful, the more likely it is that ego will see this actor

as powerful. This parameter is significant and points in the direction predicted, lending support to our hypothesis concerning rational imitation (H1).

The interpersonal ties hypothesis (H2a) posits that the more ego trusts an actor, the more likely it is that ego will perceive this actor as powerful. The trust effect (11) was significant and points in the predicted direction, supporting the interpersonal ties hypothesis.

According to the indirect ties hypothesis involving a perceived interpersonal trust relation to a high ranking actor (H2b), the prominence of the superior will positively influence individual's power reputation. Supporting this prediction, the effect of average trust received from superiors (21) was significant and has a positive sign. Being trusted by persons at high levels in the organization helped boost an individual's reputation as an informally powerful actor.

The bilateral arguing and public negotiation effects capture the idea that the stronger the actors' tendency to consider direct power strategies as appropriate, the more likely it is that this actor will be perceived as powerful by others. Neither the bilateral arguing effect (14) nor the public negotiation effect (15) is significant: the extent to which one considers these strategies as appropriate seems not to play a role in the power attribution process. These findings do not provide support for H3, according to which an expressed preference for direct power strategies should increase an actors' perceived informal power.

According to the indirect horizontal power strategies hypothesis (H4a), individuals who consider this type of strategy to be appropriate are expected to be seen as powerful. The asking opinion of others effect (16) is not significant: the extent to which one regards the indirect horizontal strategies as appropriate has no effect on one's informal power reputation.

The hypothesis concerning indirect vertical (formal) power strategies suggests that one's tendency to consider formal power strategies as appropriate may result in others perceiving an actor as less powerful (H4b). The "complain to superiors" parameter (17) was significant and has a negative sign. This finding lends support for H4b: individuals who regard activating formal authorities to influence others as appropriate are less likely to be viewed as informally powerful over time by other group members.

According to the passive power strategies hypothesis (H5), individuals who view this type of strategy as appropriate are expected to be seen as less powerful. The "retaliation" parameter (18) is significant and points in the predicted negative direction. However, the resignation parameter (19) is not significant, implying that H5 found partial support in our data. Retaliation leads to a more negative power reputation over time, whereas resignation does not seem to have an effect.

2.6 Discussion and Conclusion

In this study we addressed the following two questions: Why are some organization members perceived to have more informal power than others? And, which factors affect the stability or change of perceptions concerning someone's informal power position?

Consistent with theories pertaining to *rational imitation*, we found that the higher the number of group members who perceive an actor to be powerful within the group, the more likely it is that ego also perceives this actor as powerful. That is, to deal with uncertainty concerning who is powerful, individuals rely on others' perceptions of an actor's informal power. This finding is in line with previous studies reporting individual tendencies to perceive popular actors as even more popular than they really are (Kilduff et al., 2005). In a similar way, a large number of power attributions to an actor within a group increases the likelihood that this actor will be perceived by ego as powerful or perhaps even more powerful over time. More generally, the findings underline the importance of imitation as a strategy to cope with uncertainty concerning social processes in groups.

Further, we found support for a *social embeddedness* argument (the interpersonal ties hypothesis). Close interpersonal trust relationships between actors are a source of information concerning an actors' interactions with other group members, as well as his or her degree of influence in such relationships. Our finding supports the idea that individuals tend to rely on the trusted person's accounts when attributing power to him/her. Therefore, the more ego trusts an actor, the more likely he is to perceive this actor as powerful over time.

In addition, we have demonstrated that power reputation is affected by an individual's trust relationship to a prominent other. Being trusted by the formally powerful creates prestige and boosts other group members' evaluations of the actor concerned. Our interpretation of this finding is consistent with balance theory (Heider, 1958) and with previous research on the "basking in reflected glory" effect (for a review, see Cialdini, 1989), showing that people actively seek to enhance their reputations by proclaiming bonds to successful others. Our findings are also compatible with research on impression management which suggests that individuals perceived to be connected to prominent others may be credited with the ability to form powerful coalitions and influence higher-status organization members (Tedeschi & Melburg, 1984). Indeed, it appears that individuals who are trusted by a higher-status other may gain crucial advantages in the market for power and influence in organizational settings.

Overall, these results indicate the importance of considering ego's personal ties to other organizational members at different hierarchy levels as a valuable source of information on (changes in) their relative power position. It is noteworthy that after

controlling for all the other predictors, being trusted by other group members did not enhance one's power reputation. Perhaps in the relatively small team of individuals working closely together over time, employees who are getting along with the other group members and who are not in a position to control information by withholding, disclosing or modifying it to their own benefit, are likely to be trusted. However, getting along might not directly translate into getting one's way, so individuals who appear to be trusted by others may still be perceived as relatively powerless over time. Future organizational research focusing on the link between trust and informal power might further delineate the mechanisms accounting for this finding.

The ethnographic material presented earlier sheds light on the observed team dynamics. The changes that the organization went through between the first and the third measurement produced major internal contradictions within the team. The collapse of the trust network led to considerable confusion and uncertainty among group members, and this situation may have generated particular patterns of interactions. First, under such ambiguous conditions a personal tie to another team member or perception of a trust link to a prominent person may become especially important cues when forming inferences of others' power. Second, the emerged uncertainty may have reinforced the imitation mechanism, in that when drawing inferences about someone's power, individuals became more likely to rely on the judgments of others in general, and the others that they trust in particular.

As far as the effect of *power strategies* is concerned, our hypotheses found only partial support. The extent to which the *direct* strategic behavior is regarded as appropriate has no effect on an individual's informal power. A possible explanation might be that this type of strategic behavior may be visible only to a limited number of actors, and hence has less effect on one's power reputation in the group as a whole. Furthermore, we found no support for our hypothesis concerning the effect of the preference for *indirect horizontal* strategic behavior. Regarding direct and indirect horizontal strategic behavior as appropriate does not affect the inferences others draw concerning one's power position in the team. A possible explanation could be related to measurement issues. For this study we chose to build on the distinction between direct and indirect power strategies (Morrill & King Thomas, 1992), and it is possible that the chosen measure could not capture the strategic behavior characteristic of actors in our sample. Future research might benefit from using other measures of power strategies which have been proposed in the literature and which focus on other theoretical dimensions (Kellerman & Cole, 1994). For example, focusing on managerial power strategies, Gioa & Sims (1983) suggest distinguishing between positive, punitive, and goal-setting strategies (rather than building on the distinction between direct and indirect strategies) as behaviors that will differentially affect power attributions of subordinates. Furthermore, our measure is based on self-reports and focuses on the perceived appropriateness of certain strategies rather than actual strategy use. Our results suggest that to measure strategic behavior of organizational actors, it might be important for future

research to incorporate different reporters of the actual strategy used in the organizational setting.

We found support for our hypothesis concerning the negative effect of the regards concerning the *indirect vertical* strategy appropriateness on power attributions. Organizational members appear to interpret this type of strategic preferences of an actor as a signal of his inability to get things done. Once again the ethnographic material from the setting studied helps make sense of this finding. The aforementioned changes in the organizational formal structure led to the collapse of the trust network during the measurement period: in such a situation of distrust, members of the organization might be more likely to view one other with suspicion. Negative opinions about the higher-ranking organizational constituencies were also quite common: under such conditions, individuals who consider activating formal authorities to influence others as appropriate may run the risk of being viewed negatively by their peers. Over time, this negativity might detract from that individual's reputation as a powerful actor. Our interpretation of this negative relationship is in line with earlier research suggesting that connections with high-ranking supervisors who may be viewed negatively could detract from one's reputation, rather than enhance it (e.g., Mehra et al., 2006).

We also found partial support for the negative effect of opinions about *passive* strategy appropriateness on individual's reputational power. Organizational actors seem to interpret an actor's preference for retaliation as a signal of his inability to bring together social contacts and elicit cooperative behavior from others. Individuals who view retaliation as an appropriate strategy are therefore less likely to become reputed to have more power.

Our results indicate that in addition to the effects of the individual level variables, the dynamics of power attributions are strongly affected by events in the organizational setting throughout the measurement period. In the setting that was studied, power play in the wider organizational context not only resulted in a temporary decrease in the site manager's informal power, but also led to an overall depletion of informal power attributions in the whole system. This aspect of power dynamics in the network is in line with ethnographic observations showing a general decrease of communication and interpersonal trust during this phase (Wittek, 1999).

At a theoretical level, these processes lend strong support to earlier suggestions indicating the need to consider transfer of power across organizational levels (Fiol et al., 2001), and the importance to take context effects seriously (Johns, 2006).

The following *limitations* of the present study should be noticed. First, the current results build upon a single case, the management team of a German Paper Factory, consisting of relatively few persons. More research on different organizational settings and contexts is therefore needed to be able to generalize our results.

Second, our operationalization of power strategies focuses on tactics that might be less relevant for capturing strategic behavior that others perceive as cues for an individual's power. Finally, whereas the power perceptions were measured at four points in time, power strategy items were measured only at time points one and three, and therefore their values at time point two had to be imputed using the first observation values. The imputation procedure could have an effect on the obtained results. Hence, future studies could benefit from better measurement of strategic behavior.

Empirical studies on dynamics of power attributions in real life settings, based on longitudinal network data, are scarce. Despite its limitations, then, this study represents an important empirical contribution to the study of informal power by providing further insights into modeling the antecedents and dynamics of differences in power attributions. Furthermore, the current research makes an important methodological contribution by applying the very recently developed SIENA algorithm for the analysis of valued network observations collected from individuals reporting on each other, rather than through self-report data. For small data sets such as the setting under study, this extension of the original model presentation (i.e., for binary networks) allows efficient use of all the available network information.

On one hand, our findings provide support for a more traditional power explanation. An important conclusion that can be drawn is that stability or change of perceptions concerning someone's informal power position are driven by actors' social embeddedness in networks of interpersonal relationships, with personal ties serving as a source of information on other's power positions. Furthermore, we showed that the degree of power attributed is related to actors' regard of certain power strategies as more appropriate than others. Strategic behavior does not necessarily seem to enhance one's reputation of an influential actor. However, a preference for certain strategies appears to negatively affect the judgments others make of one's power. More specifically, considering passive and indirect vertical strategies as appropriate decreases one's power reputation over time, whereas the extent to which indirect horizontal and direct strategic behavior is considered as appropriate has no effect at all. Our results also suggest that informal power is related to overall formal status in the group, but that being in a bilateral employee-supervisor relationship did not have an effect on the power attributions.

On the other hand, our results provide support for an alternative power conceptualization - as a phenomenological process whereby individuals attribute power to certain others within organizations that can be best understood as reputational markets. The stability or change of perceptions concerning someone's informal power position are driven by other actors' perceptions of this actor's informal power. From this perspective, power is an inference people draw about others, with reputation playing an important role in the power attribution process. This study therefore provides additional support for the

previously proposed notion that the essence of power might be in being seen as powerful by others.

The questions raised by the current study indicate that further research on informal power perceptions can offer additional valuable insights concerning the antecedents and dynamics of perceived differences in informal power reputation.

Chapter 3

Pathways to Power Reputation: The Interplay between Structural and Behavioral Mechanisms

This empirical study examines antecedents of power reputation. We argue that the structure of informal relations in the personal network, and behavior - the use of power strategies - contribute to how powerful others at the workplace perceive an individual to be. Operating at both individual and dyadic levels of analysis we apply exponential random graph modeling (ERGM) to complete social network data collected in a site (N=33) of a medium-sized Dutch non-profit organization. Results show that a visible structural advantage more easily observable by others contributes to one's power reputation. Strategic behavior related independently and significantly to others' perceptions of the individual's power. Moreover, individuals disadvantaged by structural constraints were more likely to attribute power to the other group members.

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3 PATHWAYS TO POWER REPUTATION: THE INTERPLAY BETWEEN STRUCTURAL AND BEHAVIORAL MECHANISMS

3.1 Introduction

Power is a fundamental aspect of organizational life. Though power is often conceived of as a structural variable and as a property of social relationships (Emerson, 1962), it has long been recognized that power reputations play a fundamental role and can be an important asset in their own right (Dahl, 1957; Lord & Maher, 1991; Wrong, 1968).

Whereas considerable research has been carried out on the antecedents of structural power (Burt, Jannota, & Mahoney, 1998; Markovsky, Skvoretz, Willer, Lovaglia, & Erger, 1993; Molm, 1990; Molm & Cook, 1995), research on the antecedents of power reputation has been rare (see Brass & Burkhardt, 1993; Krackhardt, 1990 for exceptions). The present study addresses this gap by tackling the following questions: why are some organizational members perceived to have more power than others, and which factors affect an individual's power reputation? More specifically, we investigate the structural and behavioral antecedents of the network of power reputations as it emerges from power attributions in dyads: "a manifestation of the distribution of power in a system of actors will be the network of influence and deference relations among actors in the system. Actor B is influenced by, defers to, actor A if B perceives A as being powerful relative to himself. The influence of one actor over another is the perception by the subordinate of the greater relative power of the superior" (Burt, 1977, p. 254).

Our study makes two major contributions. First, whereas previous models focused solely on the characteristics of the receiver of power attributions (Brass & Burkhardt, 1993; Ibarra, Kilduff & Tsai, 2005; Molm, 1990), we consider the idea that the allocation of power attributions towards somebody might be influenced not only by the characteristics of the person who is evaluated (alter, the "receiver"), but also by the characteristics of the person who evaluates (ego, the "sender"). The present study is the first to incorporate the structural characteristics of the persons who attribute power, and to derive testable hypotheses regarding their potential impact on the power attribution process[2].

Second, whereas previous research (e.g., Brass & Burkhardt, 1993) is restricted to individual level structural characteristics of the receivers of power attributions (e.g., different

[2] In our model we also control for the behavioral characteristics of the person who attributes power (the ego), however we formulated no specific hypotheses regarding their potential impact on power attribution process.

measures of centrality), we include dyad level indicators of the structural power of both the sender and the receiver (e.g., Burt's (1992) measure of dyadic constraint). This allows us to better capture the (lack of) alternative exchange opportunities of exchange partners, thereby providing a more accurate operationalization of structural power.

We first briefly discuss previous research. The second section presents the theoretical background and hypotheses. We then sketch our research design, outline our methods, and describe the results. We conclude with a discussion of the implications and limitations of the study.

3.2 Previous Research

3.2.1 Power Reputation

It has been widely acknowledged that organizations can be viewed as aggregates of individuals (Rousseau, 1997; Staw, 1991), forming a social structure (Pfeffer, 1991) that is organized and mobilized to achieve certain outcomes. A fundamental part of organizational life and functioning is that some members influence others to achieve a variety of organizational goals (e.g., French & Raven, 1959; Kipnis, Schmidt, & Wilkinson, 1980; Yukl & Falbe, 1990). While the literature focusing on the social influence processes is extensive, there is relatively little that deals with power reputations. Ferris, Blass, Douglas, Kolodinsky, and Treadway (2003) define personal reputations as: "… a perceptual identity reflective of a complex combination of salient personal characteristics and accomplishments, demonstrated behavior, and intended images, presented over some period of time as observed directly and/or as reported from secondary sources". Hall, Blass, Ferris, and Massengale (2004) follow this definition in their study of leadership in organizations, and suggest that: "…leader reputation is a perceptual identity of a leader as held by others that serves to reduce the uncertainty regarding the expected future behavior of that leader". We build on this work, and propose that power reputation is a perceptual identity of the degree of power an individual has, held by the other group members.

3.2.2 Antecedents of Power Reputation

Previous research regarding power reputation has focused on two types of antecedents: structural and behavioral (Brass & Burkhardt, 1993). First, structural approaches view power as primarily a structural phenomenon, and emphasize the importance of social network position and the advantage of being in the right place (Brass, 1984; Brass, 1992; Burt, 1992; Krackhardt & Hanson, 1993). A network of informal roles and related behavioral expectations, known as role-sets, are established as organizational members interact with each other. The social network to which an actor belongs can be a source of that actor's reputation as a leader or a good performer (Kilduff & Krackhardt, 1994): "a leader's reputation is both a product of, and is defined by, social networks" (Hall et

al., 2004, p.219). The key idea behind structural explanations is that power derives from dependence, control and information benefits (Burt, 1992; Emerson, 1962; Ibarra, 1993). Individuals occupy an advantageous position in exchange networks if their network is characterized by a high proportion of structural holes. In other words, they have many exchange options to persons who have few potential partners with whom to exchange. The autonomy afforded by structural holes reduces the degree to which an actor is constrained by his contacts. On one hand, central or "brokerage" positions yield substantial benefits, including influence, access to valuable information, and positive power reputation. On the other, structural constraints generate significant disadvantage, associated with the lack of autonomy and increased dependence on other group members (Brass & Burkhardt, 1993; Mehra, Dixon, Brass, & Robertson, 2006). Advantageous network positions convey social capital, which in turn affects one's reputation, for example by facilitating the flow of information and providing a better opportunity to access and use the valuable resources embedded in the social networks (Lin, 2002). Thus, individuals with high social capital may be more likely to have a positive reputation (Hall et al., 2004).

Second, behavioral explanations (e.g., Allen & Porter, 1983; Kipnis et al., 1980; Mowday, 1978) emphasize that "power is manifested through behavioral actions" (Thompson & Luthans, 1983) and that "having a basis of power is not enough, the individual must act" (Mintzberg, 1983). For example, political skill and political influence behaviors (Hall et al., 2004) were found to enhance reputations through their strong sense of adaptability in performance (e.g., Pulakos, Arad, Donovan, & Plamondon, 2000), thereby contributing to career advancement and managerial effectiveness (e.g., DeLuca, 1999; Jackall, 1988; Mainiero, 1994; Mintzberg, 1983; Pfeffer, 1981b).

3.3 Theoretical Background

3.3.1 The Structural Advantage Mechanism

Some individuals are perceived as more powerful and influential because they occupy an advantageous position in the (informal) networks of the organization. Scholars have conceptualized structural advantage in a variety of ways. We distinguish individual level and dyad level.

First, individual level measures assume that power derives from being central in the informal network or having exchange opportunities which others lack. For example, the sheer size of an individual's social network – i.e. the number of direct or indirect contacts – can convey benefits and superior exchange opportunities. Social ties may also become more valuable to the degree that they span holes to non-redundant contacts (Burt, 1992). Occupying such a brokerage position between otherwise disconnected actors yields information and control benefits (Balkundi & Kilduff, 2005; Brass, 1984; Krackhardt, 1990). With information being a critical resource in organizational settings (McCall, 1979;

Mechanic, 1962; Pettigrew, 1972; Pfeffer, 1981a), people with many "structural holes" have access to more diverse information, and therefore have a better opportunity to manipulate information for their own purpose. Frequently used measures to capture individual level structural power are sociometric centrality indices like degree, closeness, betweenness, and aggregate constraint - a measure for the absence of structural holes[3] (Burt, 1992; Freeman, 1979; Wasserman & Faust, 1994).

Second, dyad level measures capture the availability of alternative exchange options within specific bilateral exchange situations. For example, Burt's dyadic constraint measures the degree to which each specific alter in a focal actor's network imposes structural constraint on the focal actor (Burt, 1992). Dyadic constraint is highest in a situation where the focal actors' network is inefficient. In other words, he invests time and energy in the relation to a certain alter whose network lacks structural holes, i.e., someone who is embedded in a dense network and is also tied to other contacts in the focal actor's network. A low dyadic constraint originates from alters who do not have many ties to a focal actor's contacts.

When applied to power reputations, individual and dyad level measures are assumed to produce the same effect, but they differ in the underlying mechanism. Individual level structural power (like the number of contacts) is assumed to increase power reputations independently of the specific configurations of the exchange networks of the individual. The assumption is that a person who is known to be central in a network will receive higher power attributions from more group members. Dyadic level structural power (represented in a colleague imposing high constraint on ego) is assumed to lead to high power attributions only to those individuals who actually restrict ego's exchange opportunities.

Since both individual and dyad level measures of structural power are assumed to increase power reputation of the receiver (i.e., alter), our first hypothesis is as follows:

> *Hypothesis 1a (alter level): The higher the structural power of an individual (alter), the higher the likelihood that others perceive this individual as powerful.*

We further argue that occupying a strong or weak structural position in the network does not only affect alter's perceptions of ego's power, but has also an impact on ego's power attributions to alters. Occupying a disadvantaged network position implies a condition of dependence and limited autonomy (Burt, 1992; Cook & Emerson, 1978), resulting in feelings of helplessness and apprehension (Keltner, Gruenfeld, & Anderson, 2003). Such individuals have an elevated tendency to believe that others have power over them. At the same time, occupying powerful positions triggers feelings of being in control (Anderson & Galinsky, 2006; Galinsky, Gruenfeld, & Magee, 2003), and nourishes the perception that

[3] Aggregate constraint measure indicates the extent to which ego is constrained by the structure of the network involving his alters. The lower its value, the more structural holes the ego's network contains.

others are less powerful. Hence, individuals in a structurally weak network position will on average provide more power attributions to other group members than individuals in advantageous positions:

> *Hypothesis 1b (ego level): The lower the structural power of an individual (ego), the higher the likelihood of him/her attributing power to other actors in the group.*

3.3.2 The Behavioral Mechanism

Organizational structure may provide access to and control of valued resources, but to acquire and strategically use these resources the individual must act. Of special interest in the present study is the impact of an individual's actions on how others evaluate their power. This raises an interesting question: regardless of structural position in the informal social network, can one's overt behavior (e.g., the use of power strategies) generate a more positive power reputation?

Power is an important basis for hierarchical differentiation, and a major factor in understanding how organizations work. Central to research on power in organizational settings is hierarchy negotiation, aimed at enhancing and maintaining one's hierarchical position relative to others in dominance or status hierarchies. Individuals differ in ability, skills, and willingness to use those skills to acquire and exercise power. Behavioral strategies expressing political skill and savvy are especially useful when trying to get ahead in organizations and build favorable reputations (DeLuca, 1999; Kyl-Heku & Buss, 1996; Lund, Tamnes, Moestue, Buss, & Vollrath, 2007; Mintzberg, 1983; Pfeffer, 1981b). Strategies are defined as the psychological and behavioral means through which an individual tries to accomplish his or her personal goals in a social environment (Kyl-Heku & Buss, 1996; Lund et al., 2007). Drawing on reinforcement and exchange theory, as well as research on social influence tactics, a number of empirical studies have found that the use of power strategies like assertiveness, coalition formation, or ingratiation increases an individual's power reputation (e.g., Brass & Burkhardt, 1993; Gioa & Sims, 1983).

The use of power strategies can affect power attributions independently of a person's structural power position. The rationale behind this effect is based upon visibility and uncertainty. Since no one actor can be embedded in every possible interaction taking place in the organization, the available information regarding the degree of power of another actor is incomplete. Dominance theories (Lee & Ofshe, 1981; Mazur, 1985; Strayer, 1995) suggest that certain social skills and overt behaviors may imply power, and thus contribute to the creation of an impression that one has power. Where information about an individual's power position is difficult to obtain or ambiguous, group members may use cues from other people's easily observable interaction style and behavior to infer these person's power.

Dominance theory further argues that people may develop more positive power reputations at least in part by expressing and earning their dominance over others in social

interactions (Lee & Ofshe, 1981; Mazur, 1985; Strayer, 1995). Organizational research along this line has found that individuals showing dominance behaviors toward their colleagues and superiors (such as taking initiative in starting social interactions, higher activity in one's social environment, coalition formation, talking more and/or louder) often receive more power attributions without actually contributing more to reaching the group's goals (Dovidio, Brown, Heltman, Ellyson, & Keation, 1988; Mullen, Salas, & Driskell, 1989; Wilke, 1985). Furthermore, humans experience high levels of agitation and activity in interpersonal encounters as leadership attempts (Pentland, 2008).

On the basis of this earlier work, we suggest that strategic behavior may enhance an individual's power reputation regardless of their structural position in the social network. This leads to the following hypothesis:

> *Hypothesis 2 (alter level): The stronger the individual's (alter's) tendency to use power strategies, the higher the likelihood of him/her being perceived as powerful by other actors in the group.*

We formulated no specific hypotheses regarding the potential interactions between structural positions and individual behavior. However, prior work showed that certain structural positions and strategic action are particularly advantageous and effective when combined with one another (e.g., Brass & Burkhardt, 1993). In the model proposed in this paper we will therefore control for the possible interactions between structural and behavioral determinants of power reputation.

3.4 Method

3.4.1 The Organization

Data for this study were collected in one of the sites of a medium-sized Dutch non-profit organization in Spring, 2009. The organization was an independent, subsidized, regional child protection institution. It comprises approximately 650 employees and has 15 sites spread across one region in the Netherlands. The organization's main objective is to provide professional assistance to children at risk and their respective families. The aim is to give the children a stable social context, to restore their mental health, and to provide the parents with counseling and guidance. The organization uses diverse intervention techniques, such as visits to the children's homes, supported housing for juveniles, and special kindergartens. The organization might be best described as a rather non-competitive setting, in which there are no formal promotion regimes and few opportunities for career advancement.

The research setting. Investigating the antecedents of power reputation in organizational settings, and testing the specific hypotheses that we have formulated, places strict requirements on the type of data that must be collected. First, this type of inquiry requires sociometric data collected from all members of the group under study. It also requires a

relatively small setting, to allow the collection of reliable complete network data with regard to sending and receiving power attributions and communication patterns of the employees. A special kindergarten (part of the organization described above) employing 38 employees and providing daycare and treatment for children with a wide variety of problems in their social, psychological and physical functioning met these specific criteria.

The site was autonomous in the sense that employees rarely engaged in contact with organizational members outside the site. Among the employees were social workers, behavioral scientists, medical doctors, therapists, and administrative staff. Employees worked in teams of three to eight people, with some directly engaged in treatment of children, and others engaged in various support tasks. The successful treatment of the children referred to the kindergarten required a constant exchange of information about them and their family between the employees working in different teams. An additional requirement was joint work between the teams and the professional staff that could assist in treating the children. The teams did not have a formally designated team leaders or supervisors, and instead they were all managed centrally by one (male) manager. There were two more male employees besides the manager. All of the remaining employees were female, and most worked part-time.

All data were collected via paper and pencil questionnaires sent out to the participants' home addresses. 33 out of 38 employees completed the survey (84.2% response rate). The mean age of the employees was 36.92 (range: 24-61; SD = 11.66) who on average had been employed for 6.68 years (SD = 5.86; Mdn = 4; *minimum* = 1, *maximum* = 22).

3.4.2 Measures

Dependent Variable

Power reputation. Due to the relatively small size of the site being studied, the question of power reputation could be addressed directly by presenting the respondents with a roster of the names of all 38 employees working there. Building on previous work on power reputation in organizations (e.g., Brass, 1984; Pfeffer, 1981a), individual power was assessed by asking each respondent to indicate on a 5-point Likert scale ranging from 1 (very little influence) to 5 (very much influence) how much influence each colleague has on the state of affairs within the site. The question was worded as follows (rough translation from Dutch): "It is often the case at work that some people are more influential than others. Examples might be people who have clear ideas concerning work-related issues, who communicate their ideas to others and thereby influence the opinions of their colleagues. Please indicate for each of the following people the degree of influence that they have on the state of affairs within the site". For the analysis, the power network has been dichotomized: the "influential" and "very influential" nominations were coded as 1, and the remaining types of nominations as 0.

Building on the insights from earlier work (e.g., Brass, 1984; Burkhardt & Brass, 1990; Brass & Burkhardt, 1993), we chose to use the term "influence" rather than "power" in the questionnaire. Although some scholars have made definitional distinctions between the two concepts, distinctions of this sort are not common in everyday usage of the words. Furthermore, the term "power" frequently involves undesired negative connotations (Pfeffer, 1981a) that are likely to bias the results of the study.

Following the definition of power reputation that we use in this study, we attempted to obtain from raters a generalized measure of influence of the group members "on the state of affairs within the site". We assume that the measure used captures an overall perceptual identity of the degree of power one has, as held by the other group members.

This type of power reputation measure is frequently used in studies of power in organizations which display reasonable internal consistency using independent sources and different methods. Furthermore, the results of these studies suggest that reputational measures relate to objective, non-reputational measures of power, such as future promotions (Brass, 1984; Pfeffer, 1981a).

Independent Variables

Structural measures. The sociometric information on dyadic contact frequency was collected by asking each respondent to go through a roster of the site members and rate how often they had formal or informal communication with each colleague during the previous three months on a 6-point Likert scale ranging from 1 (never) to 6 (eight or more times per week). The communication network captured repeated patterns of work-related interaction between the employees (Brass & Burkhardt, 1993; Scott & Judge, 2009). We entered the communication data as a matrix and analyzed them using UCINET VI (Borgatti, Everett, & Freeman, 2002) to calculate centrality and constraints measures (i.e., structural advantage indicators).

Following Freeman (1979), *in-degree* centrality (alternatives) was defined by the number of ties an actor has with others in the network, or the number of others who choose a focal actor. *Closeness* centrality (access) was conceptualized as an actor's ability to access independently all other members of the network. *Betweenness* centrality (control) was defined as the extent to which an actor has control over other actors' access to various regions of the network. Following Burt (1992), *aggregate constraint* was conceptualized as the extent to which an actor's time and energy are concentrated in a single group of interconnected colleagues, implying no access to structural holes. *Dyadic constraint* indicated the extent to which the relationship between ego and each of the alters in ego's neighborhood "constrains" ego.

Strategic behavior. We used three slightly modified items from the studies of Kyl-Heku and Buss (1996) and Kipnis, Schmidt, and Wilkinson (1980) to capture the use of power strategies (Cronbach's $\alpha = .72$): socializing selectively ("Knowing the right people"),

coalition formation / upward appeal ("Trying to obtain the informal support of superiors"), and positive manipulation / ingratiation ("Having a feeling for when and how you can bring up certain issues"). Employees were asked to indicate on a 7-point Likert scale ranging from 1 (very unlikely) to 7 (very likely) how likely they are to use each of the strategies to influence others (colleagues and manager) at work.

Control Variables

Several control variables were used, including employees' tenure (both evaluators'-ego, and the person being evaluated - alter) and strategic behavior of the evaluator. In addition, the methodology we used allowed us to test whether the similarity in alters' and egos' characteristics affects the power attribution process. We controlled for the potential interactions between structural and behavioral determinants of power reputation by including in the model the multiplicative combinations of the structural variables by the behavioral variable. Finally, we controlled for a number of common network configurations[4].

Tenure. The length of time a person has been working at the site is likely to affect the pattern of informal interaction and the power attributions. For example, individuals who have been with the site longer may be more likely to occupy central positions in social networks, and to attract more power attributions. Using the information obtained from the organization staff records, tenure was coded as the number of years an individual had been employed by the organization.

Structural characteristics of the network. For a more accurate understanding of the processes that give rise to and sustain the network, it is important to control for the structural properties of the network (Snijders, Pattison, Robins, & Handcock 2006). These structural tendencies characteristic to social networks in general can be expressed through a number of parameters, known as endogeneous "network statistics". In this study, for example, these are a way of showing that certain patterns of power attributions occur more or less often than expected by chance. By including the alternating in-k-stars parameter in our model, we tested whether there was substantial heterogeneity of actors in terms of their in-degree that could not be explained by the other effects in the model. Two more network statistics typically recommended as control variables in exponential random graph models were included: alternating k-triangles and alternating independent 2-paths to reflect the tendency towards clustering, transitivity and preconditions for transitivity (Robins, Pattison, Kalish, & Lusher, 2007a; Robins, Snijders, Wang, Handcock, & Pattison, 2007b; Snijders, Steglich, Schweinberger, & Huisman, 2008).

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[4] Formal status was initially included as additional control variable, however it didn't play a significant role in predicting one's reputational power as none of the formal status effects in the preliminary analyses reached statistical significance. Consequently, formal position was excluded from the final analyses reported in this study.

3.4.3 Analysis Strategy

For the analysis of data on complete social networks, exponential random graph modeling (ERGM) was used, which is also referred to as the *p** model (Robins et al., 2007a; Robins et al., 2007b; Robins, Pattison, & Wang, 2009; Snijders et al., 2006). The models were computed using the statistical package SIENA in STOCNET (Snijders, Steglich, Schweinberger, & Huisman, 2007).

In what follows the ERGM approach that was used to test the hypotheses will be briefly described. For a more technical explanation of the method the interested reader is referred to Robins and colleagues (2007a, 2007b, 2009).

The major advantage of ERGM over more traditional social network analysis is that it allows the testing of statistical hypotheses about the structure of a network, while accounting for the interdependence of actors and their social relations. In the current study, we look at power reputation within an organization as the dependent network, where a power relation represents one employee (ego) attributing power to a colleague (alter). It is assumed that these network relations follow certain regularities that can be expressed as model components of the ERGM. Fitting this model to the data set then allows us to examine and empirically test these regularities, and investigate, for example, whether the extent to which ego's communication is constrained by its alters (dyadic constraint) affects the power attribution process (i.e., ego allocating power to alter).

The results of an ERGM analysis are similar to those of a logistic regression: a positive dyadic constraint parameter would imply that ego (i.e., the power attribution sender) is more likely to attribute power to a colleague who exerts high constraint over his communication than to a colleague who exerts low constraint. In other words, ego will be most likely to attribute power to the alter whom ego can least easily bypass when communicating.

The parameters representing three different levels of analysis (i.e., individual, dyadic, structural) were entered into the ERGM. We included parameters to test whether individual characteristics such as employee centrality, aggregate constraint scores, strategic behavior and tenure affected whether an actor (alter) was more likely to be perceived as powerful, and whether one (ego) was more likely to attribute power to others. As recommended for ERGM models (Robins et al., 2007a), we controlled for the strategic behavior and tenure of the one's attributing power (ego/ "sender"), and for the similarity in centrality, aggregate constraint scores, strategic behavior and tenure between the senders and the ones who receive the power attributions. Incorporating these actor-dependent covariate effects allows us to disentangle the degree to which high scores on a particular attribute coincide with a high out-degree / activity in the dependent network (ego "sender" effect), a high in-degree / popularity in the network (alter "receiver" effect), and the degree to which similar scores on a particular attribute coincide with ties in the network (ego-alter "similarity" effect). Moreover, by controlling for the similarity in strategic advantage indicators, we hope to show

that the proposed mechanisms hold irrespective of whether the actors occupy a similar structural position in the network. The second level of analyses concerned dyadic effects as described by our elaborated above example on dyadic constraint. For the third level, we included the "network statistics" parameters that describe the overall structure of the dependent variable – each actor's power reputation (measured through power attributions) in the network as a whole (elaborated in the Measures part of the paper).

3.5 Results

Table 3.1 presents the means, standard deviations, and correlations between all the variables in the study. The correlations were computed by means of the Quadratic Assignment Procedure (QAP) in UCINET VI (Borgatti et al., 2002)[5]. The coefficients are Pearson correlations between the off-diagonal cells of two matrices. Significance indicating *p*-values are obtained using permutations of the actors. If the coefficient falls below the fifth percentile or above the 95th percentile tails of the permutation-based reference distribution, it is considered to be significantly different from zero.

[5] To be able to compute all the correlations with the QAP algorithm the individual attributes were put into a matrix format.

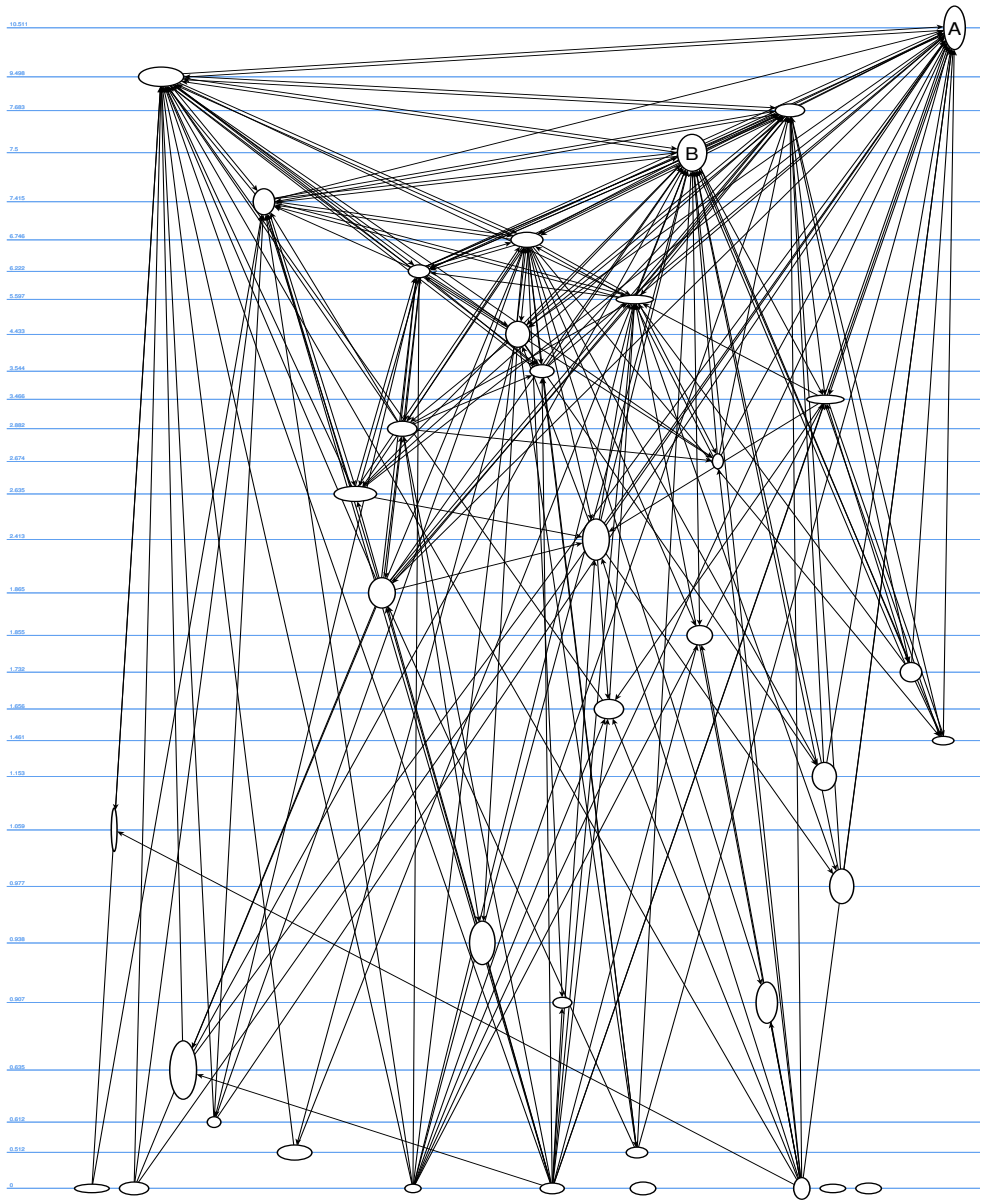
Table 3.1 *Descriptive Statistics of Networks and Individual Attributes: Average Levels (Means), Heterogeneity Indicators (Standard Deviations) and Correlations*

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8
1. Power reputation (out-degree)	33	2.78	1.02	-							
2. In-degree centrality	38	91.97	18.60	.35***	-						
3. Closeness centrality	38	25.03	2.46	.31*	.46**	-					
4. Betweenness centrality	38	19.00	23.14	.004	.09	.44**	-				
5. Aggregate constraint	38	.24	.04	.22***	.49**	.27^{o}	-.41*	-			
6. Dyadic constraint	38	.56	1.22	-.17*	-.31*	-.25*	.38*	-.84***	-		
7. Strategic behavior (alter)	33	4.52	1.06	.16**	.02^{o}	-.18	-.14	.31***	-.38***	-	
8. Tenure (alter)	38	6.68	5.86	.16*	.25*	.23^{o}	.06	.09	.04	-.20	-

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ^{o} $p < 0.10$

The power reputation network is shown in Figure 3.1. Vertical positions indicate the sociometric status of a specific actor in the power reputation network, which was calculated according to Katz (1953). Horizontal positions were determined to optimize the match between sociometric and euclidean distances (Brandes, Raab, & Wagner, 2001).

Figure 3.1 *The Power Reputation Network*



Note. A power attribution from ego to alter is present if ego perceives alter to be rather influential or very influential. The height and the width of the nodes differ based on one's tenure and strategy use, respectively. A node labeled "A" is the manager; node "B" is the behavioral scientist – the second most important person in terms of the position in the formal hierarchy of the current organizational setting.

The results pertaining to the hypotheses we tested using ERGM are summarized in Table 3.2. For each of the effects included, a parameter is estimated which can be used for testing the hypotheses derived above. The structural (H1a) and the strategic advantage hypotheses (H2) formulated on the alter level can be tested directly by looking at the significance of the parameters estimated for the respective alter effects. The structural advantage hypothesis formulated on the ego level (H1b) can be tested by looking at the significance of the parameters estimated for the respective ego effects. The dyadic level structural advantage effect can be tested by looking at the significance of the main dyadic constraint effect.

Note that the parameters presented do not refer to a linear model, but are comparable to logistic regression coefficients. To compare the effect sizes, it is necessary to consider the different scaling of the predictor variables, and to calculate the odds ratios in order to get an impression of how estimated choice probabilities look like. Table 3.2 presents the raw coefficients, which can be interpreted as the predictor variables' contribution to the log-odds of sending power attribution in a given sender-receiver pair vs. not sending it.

Table 3.2 *Power Reputation: Parameter Estimates and Standard Errors (SE) of Exponential Random Graph Model*

	Informal Power Attributions	
Parameter	***Estimate***	***SE***
Structural variables on individual level		
In-degree ego	0.01	0.01
In-degree alter	0.04	0.02*
In-degree similarity (ego-alter)	-1.02	0.99
Closeness ego	0.15	0.05**
Closeness alter	0.02	0.08
Closeness similarity (ego-alter)	-0.99	0.70
Betweenness ego	0.01	0.01
Betweenness alter	-0.01	0.01
Betweenness similarity (ego-alter)	1.36	0.63*
Aggregate constraint ego	9.90	4.81*
Aggregate constraint alter	-0.59	5.96
Aggregate constraint similarity (ego-alter)	0.22	0.55
Dyadic relationships		
Dyadic constraint in the communication network	-0.01	0.22
Strategic behavior		
Strategic behavior ego	0.11	0.09
Strategic behavior alter	0.37	0.14**
Strategic behavior similarity (ego-alter)	0.92	0.54
Interactions		
In-degree centrality x strategic behavior alter	-0.02	0.02
Closeness centrality x strategic behavior alter	0.15	0.10
Betweenness centrality x strategic behavior alter	0.01	0.01
Aggregate constraint x strategic behavior alter	8.69	6.71
Dyadic constraint x strategic behavior alter	0.01	0.23
Controls on individual level		
Tenure ego	-0.03	0.02
Tenure alter	0.04	0.02*
Tenure similarity (ego-alter)	0.48	0.47
Network statistics		
Alternating in-k-stars	-0.14	0.34
Alternating k-triangles	0.65	0.14***
Alternating independent 2-paths	-0.12	0.03***

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The alter level structural advantage hypothesis (H1a) posits that the higher one's structural power in the informal network, the higher one's power reputation. The in-degree alter effect is significant and points in the expected positive direction. This implies that in-degree centrality is independently related to one's power reputation – individuals with active, extensive communication networks are more likely to be perceived as powerful by their colleagues. The relationships between alters' betweenness, closeness centrality, aggregate constraint and power reputation are not significant. Furthermore, the main effect of dyadic constraint on one's power reputation is negative and not significant. Taken together, these findings provide partial support for Hypothesis 1a.

In addition to the impact of the characteristics of the alter on his/her power reputation, the methodology used allowed us to examine whether the structural characteristics of the one's attributing power (ego effects) affect the power attribution process. The ego level structural advantage hypothesis (H1b) states that the lower an individual's structural power, the higher the likelihood of him/her attributing power to other actors in the group. When looking at the respective ego effects, we see that only two of the four included structural advantage indicators yielded significant results. The aggregate constraint ego effect was positive and significant, suggesting that the more ego is constrained by the structure of the network involving his alters, the more likely he is to attribute power to others. Furthermore, the closeness ego effect was positive and significant, implying that actors possessing high closeness centrality are more likely to attribute power to others. Thus, these findings provide partial support for Hypothesis 1b.

In the strategic advantage hypothesis (H2) we argued that the stronger the focal actor's (alters') tendency to use power strategies, the more likely it is that he/she will be perceived as powerful by others. The power strategies alter effect is significant and points in the expected direction, thereby lending support to Hypothesis 2. This implies that, controlling for the structural effects, individuals who are more likely to engage in strategic behavior (i.e., to use power strategies) attract more power attributions, and hence are perceived as more powerful by their colleagues. This finding confirms our expectation that regardless of structural position in the informal social network, one's strategic behavior results in more power attributions, and enhances one's power reputation.

We now turn to the discussion of results for the control variables. In the model tested, we controlled for the tenure of the sender (ego), receiver (alter) and the similarity in tenure between the two. A significant and positive tenure alter effect indicates that employees with a higher tenure attract more power attributions, hence are perceived as more powerful by their colleagues. This finding is consistent with the notion that power is a function of a person's stock in different "power bases" (French & Raven, 1959). Employees who have been with the organization longer are also likely to have greater expertise. In day to day situations at work that require this expertise, their experience and greater knowledge relative

to others involved is likely to contribute to their power reputations. The tenure ego and similarity effects were not significant.

Of the behavioral advantage ego and structural advantage similarity effects which were included, there was only a significant positive betweenness similarity effect. This finding indicates that actors with similar levels of betweenness centrality are more likely to attribute power to each other.

Of the five possible interactions between the structural and behavioral determinants of power reputation, none were significant. This shows that people with a tendency to engage in strategic behavior are no more likely to benefit from occupying structurally advantageous positions in the network. It seems that coupling the structural advantage in the network with strategic behavior does not enhance one's power reputation. This finding provides further support for the independent effects of one's structural position and strategic behavior on one's power reputation, reported above.

ERGM models allow controlling for a number of network statistics for which no specific hypotheses were formulated, and we consider that these results are worth mentioning. There was a significant, positive alternating k-triangles parameter and a significant negative alternating independent two-paths parameter, suggesting that the power attribution process is structured hierarchically. The alternating in-k-stars parameter was not significant, implying that there was no indication of substantial heterogeneity of actors in terms of their in-degree that could not be explained by the other effects in the model.

3.6 Discussion

The current study addressed the following two questions: Why are some organizational members perceived to have more power than others? And, which factors affect one's power reputation? In answering these questions, we examined the structural and behavioral (i.e., strategic) sources of power, and whether social structure and behavior combine to predict power attributions. The structural network effects were examined from the perspective of individual actors, as well as the larger network within which the actors are embedded.

The findings presented in this paper are essentially twofold. First, we have seen that in terms of its effects on the power attribution process, structure matters, but mostly for weakly embedded individuals. Thus, an individual's overall structural advantage is not used as an indicator of this person's power: rather, it is the evaluators' structural disadvantage that affects their power allocations to others in the group. Secondly, our findings suggest that only the visible indicators of structural advantage, as well as an individual's overt behavior, captured in our case by in-degree centrality and a tendency to engage in strategic action, appear critical to the development of the reputation of a powerful actor. In the organization

studied here, visibility therefore seems to be the dominant mechanism driving the power attribution process.

There seem to be both structural and behavioral sources of increased visibility in the organization under investigation. First, only one of the five measures of structural power was systematically related to higher power reputations: the number of contacts. The fact that in-degree is also the least complex measure of structural advantage suggests that power perceptions depend upon visibility, and thus more recognizable source of one's global status in the group. Group members seem to use rough and easily accessible cues about network embeddedness rather than complex network positions to assess a colleague's power position. The number of contacts is easily understood by employees and is readily seen as a perceived indicator of influence. Indirect contacts are much more difficult to envision or observe (Brass, 1984; Krackhardt, 1990). This finding is in line with Brass and Burkhardt's (1993) earlier study and with previous work suggesting that leaders tend to emerge through active communication behavior (e.g., Grippa & Gloor, 2009). An extensive network increases the likelihood of interacting with people possessing different knowledge and perspectives. Thus, a high degree centrality may contribute to heterogeneity among one's contacts, which has been previously found to stimulate creativity and innovativeness (Pelled, Eisenhardt, & Xin, 1999; Reagans & Zuckerman, 2001; Milliken & Martins, 1996) and is associated with higher influence.

Though more complex measures of structural advantage did not affect the likelihood of higher power reputation in the organization under investigation, structural position did have an impact on the power attributions of the sender: we found, for example, that individuals in a "weak" structural network position (i.e., high aggregate constraint) were more likely to attribute power to others in the group. They are more likely to feel dependent on other group members, and suffer from the limited autonomy afforded by the lack of structural holes. This in turn may contribute to the perception that others have power over them, and hence increase the likelihood of power attributions to the other actors. Hence, the availability of non-redundant exchange opportunities for an individual matters mostly for this individual's *allocation* of power attributions to others, whereas the number of ties of an individual matters for the power *reputation* of this individual. Furthermore, we found that actors possessing high closeness centrality were also more likely to attribute power to others. Actors who are central (in terms of closeness) can quickly interact with all others because they have the shortest paths to them (Freeman, 1979). Being close to everyone else may increase the likelihood of being exposed to influence attempts by other group members, thereby affecting the allocation of power attributions towards them. Overall, the identified sender effects suggest a shift from the common view of structure as a crucial determinant of how others look at a focal actor, to one which acknowledges the impact that structural position has on how the focal actor herself looks at others. By disentangling sender and receiver effects in the attribution of power reputations, our study refines insights from earlier

research, and provides a more accurate assessment of the factors affecting the power attribution process within organizational settings.

Second, since we found no support for the interaction between behavioral and structural determinants of power, we can conclude that strategic behavior results in a positive power reputation regardless of an individual's structural position in the informal social network. Furthermore, strategic behavior appears to be a stronger and a more recognizable source of power than centrality. Thus, it is more likely that others recognize and attribute power to individuals who actively engage in strategic behavior than to those who have a structural advantage. This finding is consistent with an intuitive notion of power, namely that powerful people tend to actively engage in behaviors that signal their dominance to others. Furthermore, it is consistent with arguments derived from dominance theory, which suggest that people gain informal power by expressing and earning their dominance in social interactions (Lee & Ofshe, 1981; Mazur, 1985; Strayer, 1995). The informal network position involving a complex set of relations between an individual and his indirect contacts is much more difficult to observe (Krackhardt, 1990). Therefore, others are more likely to perceive as powerful individuals whose high network activity level and overt behavior imply power, and thus help create the impression that they actually have power.

The non-significant findings for dyad constraint, the receiver effect of aggregate constraint, and the interaction between structural and behavioral variables may be explained by the specific organizational context in which our study was carried out. Two aspects of organizational context may play a particularly important role for the development of power reputations: organizational size (Krackhardt, 1990) and (cooperative vs. competitive) organizational climate (see Kilduff & Brass, 2010).

First, in small organizational settings where employees are part of interdependent teams working closely together in a collaborative manner, other people's overt behavior (rather than the less visible structural advantage in the network) might become an especially important cue when forming inferences of their informal power. As proposed in an earlier study by Krackhardt (1990), in small settings, being in the center of the network or at the top of the formal hierarchy does not provide a real structural advantage. In a larger organization, where people are often not even aware of each other's existence, structural links to reputed power may prove to be much stronger.

Second, the organization under study operated in the childcare field. An important common "group goal" was to provide relief and treatment to children at risk and their families. Accomplishing this goal requires the site's employees to work with each other in a collaborative manner, frequently exchanging information about the children and their families, knowledge and expertise. This is clearly a non-competitive setting in which being an opportunistic broker and playing off others against each other does not pay off. It appears that in the setting studied, developing unique, non-overlapping relationships with distinctly

different people may destroy interpersonal trust and thereby hamper accomplishment of the common goal.

It may be that in this type of organizational settings with cooperative climates, being an efficient actor in Burt's sense (i.e., acting as a go-between for those not connected with each other) is not regarded as a critical resource, and thus is not of major concern. Predictions and insights generated by Burt's structural hole theory may be more applicable to highly competitive, large organizational settings where entrepreneurial opportunities to broker the flow of information between people on opposite sides of the structural hole may represent a critical resource, and as such indeed enhance one's power reputation. The fact that we were able to identify strong structural sender and receiver effects even in such a small-scale and cooperative setting can be considered as a conservative test of a structural approach. As pointed out by Kilduff and Brass (2010, pp. 340-341), "…explicit consideration of competitive and cooperative culture may be necessary to understand fully the relative advantages of various network structures". Hence, further research in different organizational settings would allow our results to be generalized, and so achieve a more enlightened perspective on the antecedents of power reputation in organizations.

The following *limitations* of the present study should be noted. First, due to the cross-sectional design, we were unable to conduct a more severe test of the hypothesized relations that would allow us to exclude any alternative explanations of the reported findings. Future research should use a longitudinal design to shed more light on the direction of the relationships among structure, behavior and power reputation, the consequences of power differences for a wide range of organizational outcomes, as well as the dynamics of perceived differences in power reputation.

Another limitation is related to our operationalization of strategic behavior. Observing behavioral strategies in a field setting is practically difficult; hence we used subjective measure to assess respondents' likelihood to engage in strategic behavior. Although we treat the obtained information on behavior intentions as a proxy for the manifestation of individual strategic behavior, we acknowledge that it is not precisely the same. Future studies could benefit from a more accurate measurement of the actual strategic behavior. Furthermore, in our reliance on self-evaluations we had to assume that the participants were able and willing to disclose information pertaining to behavioral strategies and that any bias produced by social desirability would be operating in a similar way across all the respondents. Our power strategies measure included both more and less socially desirable strategies. The detected strong relationship between strategic behavior and power reputation suggests that any social desirability bias operated similarly across all participants.

Additionally, future research might benefit by including personal sources of power different from those used in the current study. Social network researchers increasingly urge that "the individual must be brought back in to acknowledge and account for the micro-

foundations of structural research" (Kilduff & Krackhardt, 1994). They advocate the incorporation of personality traits, like the need for power and self-monitoring disposition, as a crucial moderator or mediator in network models of power reputation (Brass & Burkhardt, 1993; Burt et al., 1998; Harms, Roberts, & Wood, 2007; Ibarra et al., 2005; Lund et al., 2007; Mehra, Kilduff, & Brass, 2001). Personality characteristics are likely to be related to one's position in the informal network, one's ability to recognize and exploit the advantages that specific network structures have to offer, and the choice and intensity of use of power strategies.

Overall, this study fills a gap in the existing organizational literature by providing a more informed understanding of the structural and behavioral antecedents of the complex phenomenon of power reputation. An important conclusion is that individuals who lack structural holes are much more likely to attribute power to others, whereas having a large number of contacts or visibly engaging in strategic power play increases one's power reputation. In other words: power reputations are driven by visibility, and visibility resides in the size of one's network and one's dominant behavior.

Chapter 4

The Dynamics and Co-evolution of Power and Friendship Networks in Organizations

Drawing on social exchange theory and adopting the perspective of the two parties sharing a social tie, this study investigates the dynamic interplay of power and friendship networks in organizations. Three observations of complete organizational network data allow estimating an empirical model of the co-evolution of two network types through time. Power and friendship relations are modeled as both explanatory and outcome networks with Multiplex SIENA. Results suggest that individuals with better relational skills and high self-monitors are especially prone to befriend the powerful. Furthermore, informally powerful group members, over time, befriend those who attribute power to them. Being friends with the powerful does not enhance one's power reputation in the group. The findings offer new theoretical insights into the mechanisms underlying the formation of friendship ties to and from the informally powerful organizational members.

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4 THE DYNAMICS AND CO-EVOLUTION OF POWER AND FRIENDSHIP NETWORKS IN ORGANIZATIONS

4.1 Introduction

The social structure of an organization determines opportunities for and constraints upon the emergence of informally powerful actors. Well embedded actors invest in social relations with others, and use their social capital to gain access to information and assistance that more weakly embedded actors may lack. Their social connections yield substantial benefits, including influence, status, and positive reputation. Informal power may be conceptualized as social capital that collects around certain individuals based on the structure of their social ties (Pastor, Meindl, & Mayo, 2002).

Much of the network theory and research on individual functioning in exchange relations has assumed that people exploit social capital advantages to extract personal benefits. Although previous work alludes to how social contacts (such as friends) may become instrumentalized, no research has directly examined *under which conditions individual social relations are transformed into a tool for accomplishing personal goals*.

A number of studies, however, have found evidence that certain types of people frame their social relations differently from the rest. For example, it has been shown that compared to people who lack power, *high power* individuals are to a much greater extent guided by self-serving interests, seeing their relational partners as objects that are useful in meeting their goals (Fredrickson & Roberts, 1997; Gruenfeld, Keltner, & Anderson, 2003). Thus, instead of feeling close and connected to the people with whom they have relationships, the established ties of the powerful are objectified as strategic tools to further their personal goals (Lee & Tiedens, 2001). Besides an elevated power position, previous research has suggested that certain individual characteristics have important influence on the perception and development of social exchange. Specifically, people with *stronger strategic tendencies*, as well as *high self-monitors* have been described as having a pronounced motivation to achieve and maintain favorable reputations (e.g., elevated social status), a heightened sensitivity to the status dynamics of dyadic exchange relations, instrumental motives, and generally a more pragmatic approach to relationships (Ferris, Perrewé, Anthony, Gilmore, 2000; Perrewé, Ferris, Frink, & Anthony, 2000; Snyder, 1987).

In this article we revisit the basic social exchange and network theory assumption of individuals' instrumental approach to relationships, which in our opinion is not sufficiently specified. According to this fundamental idea, people initiate relationships in the hope of maximizing their rewards relative to their costs, and hence focus on people from whom they expect the greatest reward. Given the opportunities and resources generally available to high

power actors, friendship ties directed to them are more advantageous than ties to the less powerful group members. This increases the likelihood that those who build a friendship tie to high power individuals do so with an instrumental motive for the purpose of obtaining certain benefits. We argue, however, that the fact that the high power individual may be an attractive interaction partner with whom to build a close personal relationship (e.g., friendship) does not mean that anyone in a given group is motivated, willing, and able to establish such a tie. A question that has remained largely unaddressed by existing organizational research is: Under which conditions do social ties become instrumentalized, and used by employees to further their personal interests? In particular, who are the actors that will be especially prone to make investments in exchange relations with an expectation of a valuable return? And what are the consequences of the instrumental approach to friendship choices – is the exploitation of one's social capital advantages beneficial for employees in enhancing others' perceptions of their social status?

Our study aims to address these questions, while putting forward a more informed perspective concerning the mechanisms that underlie the relationship between power and friendship in organizational settings. Further specifying the basic assumption behind social exchange perspective, we develop and empirically test three interrelated arguments, using sociometric data from a longitudinal intra-organizational network study.

First, although we agree that resourceful actors may be actively sought out by others interested in establishing personal ties to them (Benjamin & Podolny, 1999), we suggest that individuals who successfully initiate friendship relations to the powerful differ from the rest in that they are to a greater extent driven by instrumental motives, and are more able to act on these motives to meet their goals.

Second, in contrast to low power actors, informally powerful individuals are likely to feel relatively unconstrained about pursuing opportunities that help them meet their goals. Powerful employees may "trade" friendship for deference by building relationships that are instrumental in bringing them more power (Lee & Tiedens, 2001). Therefore, friendship ties originating from high power individuals are expected to be directed towards those who attribute power to them.

Finally, in line with social exchange reasoning, we argue that if people are instrumental in building social relationships, they will be inclined to establish ties with the powerful actors to maximize their outcomes also in terms of their personal reputation within the social circle. It has indeed been shown that individual's social standing can be enhanced by the mere perception that one is socially connected to resourceful others (e.g., Kilduff & Krackhardt, 1994; Mehra, Marineau, Lopes, & Dass, 2009). Thus, exploiting one's social capital advantages is expected to be beneficial for employees in enhancing others' impressions of them.

Taken together, the current research makes two main contributions to the literature. First, we develop a theoretical framework that allows us to specify the conditions under which individual's social relations in organizations are transformed into a tool for accomplishing personal goals. In contrast to previous research, our approach provides novel insights concerning the formation of friendship ties both to and from informally powerful actors. Second, we carry out longitudinal analyses on complete social network data on friendship and power relations among employees in a real-life workplace. An innovative dynamic actor-based approach (Snijders, Van de Bunt, & Steglich, 2010) allows us to model the co-evolution between the two network types through time.

We begin with the literature review, our theoretical framework and hypotheses. We then describe the data and the methods used, followed by the presentation of the results. We conclude with a discussion of our findings, the implications and the limitations of the study.

4.2 Theoretical Background and Hypotheses

4.2.1 Social Network Ties to the Powerful

The idea that group members are connected through multiple structured informal relations, such as friendship and power, is well established within the organizational network research field (Ibarra, 1993; Krackhardt & Hanson, 1993). These different social relationships coexist in an organization and often overlap, and one type of relation may follow from another over time. Put differently, existing relations of one kind (e.g., power perceptions) may become a source of or serve as a basis on which new social ties of another kind (e.g., friendship) are built (Kossinets & Watts, 2006; Labianca & Brass, 2006; Mehra et al., 2009).

We believe that implicit in such a relational pattern is a basic *social exchange theory* assumption about costs and rewards associated with any social relationship (Blau, 1964; Homans, 1950). According to this theoretical perspective, a decision to start, to maintain, and eventually to dissolve a friendship is based on a continuous comparison of costs and rewards associated with the relationship. Costs and rewards are defined in terms of the exchange of material and immaterial goods, such as emotional and instrumental support, care, compliments, advocacy, status, and advice. The underlying theory thus poses that when initiating relationships, individuals rely on instrumental motives, and try to maximize the rewards relative to the costs by focusing on persons from whom they expect most rewards.

Relationships with individuals who have a higher status and who are more popular are likely to be beneficial (Graen, Cashman, Ginsburg, & Schiemann, 1977). Within organizational groups, the high-power actors are believed to control the resource flows and potential opportunities in organizations, possess more decision-power, and have greater social status. Besides, as proposed by the status value theory of power (Thye, 2000),

exchangeable resources controlled by high-status actors are perceived as more valuable than resources controlled by low-status actors. This notion is supported by experimental evidence showing that "subjects connected to a high-status and a low-status partner indicated they (1) tried harder to acquire the goods associated with the high-status partner, (2) would prefer to be awarded these goods, and (3) attached greater value to their acquisition." (Thye, 2000, p. 427). A personal connection to the informally powerful actors can provide the less powerful with more opportunities to access valued resources, and gain them distinct competitive advantage (Braendle, Gasser, & Null, 2005). Not surprisingly, high-power actors have been shown to be actively sought out by others interested in establishing personal ties to them (Benjamin & Podolny, 1999).

Building on the standard social exchange reasoning, we would expect that the rewards one may gain from a personal connection to someone powerful would increase the likelihood of the development of a future friendship relationship with the powerful person to the same degree among all employees. This leads to our first hypothesis:

Hypothesis 1 (gain): If A perceives B as powerful, then A is more likely to befriend B.

As the above has shown, personal ties with high power group members can provide a variety of tangible and intangible resources, such as valuable information, support, advice, and advocacy (Graen et al., 1977). We have also seen that people may generate and use their social capital to reap these rewards and benefit from their personal bonds (Balkundi & Kilduff, 2005; Mechanic, 1962). The question remains, however, whether in fact every actor in a given organizational context is to the same degree able or motivated to build a close personal relationship to the informally powerful co-workers.

We argue that the basic social exchange theory assumption regarding individuals' instrumental approach to relationships (which is put to the test in our first hypothesis) might be insufficiently specified. The accumulating empirical evidence regarding the impact of individual characteristics on organizational outcomes such as career mobility and performance (e.g., Kilduff & Day, 1994; Mehra, Kilduff, & Brass, 2001), prompted us to investigate the role that the individual differences play in the dynamics of friendship and power networks at work.

Here we take the arguments pertaining to our first standard social exchange theory hypothesis a step further, and suggest that individuals who successfully initiate friendship relations to the powerful differ from the rest. We assume that strategic relational skills and self-monitoring will have important consequences for the perception and development of social exchange, by boosting employee's instrumental tendencies and thereby promoting their confidence and ability to befriend the powerful. Highly motivated to achieve and maintain favorable reputations (e.g., elevated social status), both employees with better strategic relational skills and high self-monitors will have a more pragmatic approach to relationships, and will therefore be particularly prone to invest in exchange relations that can

be useful in meeting their goals. Building on these insights, we develop two specific hypotheses pertaining to the potential impact of employees' personal dispositions on their likelihood to instrumentally make friendship choices.

Strategic relational skill. Influence strategies expressing political skill and savvy are especially useful when trying to get ahead in organizations, enhance trust and build favorable reputations (Brass & Burkhardt, 1993; DeLuca, 1999; Ferris et al., 2000; Gioa & Sims, 1983; Kipnis, Schmidt, & Wilkinson, 1980; Kyl-Heku & Buss, 1996; Lund, Tamnes, Moestue, Buss, & Vollrath, 2007; Mintzberg, 1983; Pfeffer, 1981b). Strategies are defined as the psychological and behavioral means through which an individual tries to accomplish his or her personal goals in a social environment (Kyl-Heku & Buss, 1996; Lund et al., 2007).

Employees with better strategic relational skills have been reported to emphasize interpersonal interactions, and to have an enhanced ability to build, maintain, and develop strong informal relationships with other colleagues and supervisors (Lee & Tiedens, 2001; Wei, Liu, Chen, & Wu, 2010). One prominent explanation of these empirical findings is that employees with stronger strategic tendencies are likely to have a heightened need to maintain or improve their position relative to those around them. They tend to view interpersonal contact, and particularly interactions with more powerful others, as opportunities rather than threats (Perrewé et al., 2000). For them, friendship ties with the high-power actors represent an additional tool for overcoming a lack of resources and acquiring an esteemed position in the group. We expect relationally skilled employees to act in ways that enhance their personal objectives. Guided by instrumental motives, they will be particularly prone to seek contact, and will establish personal ties to those people from whom they expect the most reward (i.e., the powerful). These arguments suggest the following hypothesis:

> *Hypothesis 1a (strategic relational skill): Organizational members with better strategic relational skill will be more likely to develop friendship ties with people who are perceived as powerful.*

Self-monitoring. Besides employees' strategic behaviors, individual differences in personality have been shown to significantly affect status attainment (Judge, Higgins, Thoresen, & Barrick, 1999), leadership emergence (Judge, Bono, Ilies, & Gerhardt, 2002), and employee performance (Mehra et al, 2001). In particular, self-monitoring personality construct has been suggested to provide important insights into the dynamics of impression management in organizations (Snyder & Copeland, 1989, p. 7), conflict and information management, performance, and leadership emergence (Snyder, 1987, pp. 88-90; Kilduff & Day, 1994; Mehra et al., 2001). It is concerned with individuals actively constructing public selves to achieve social ends (Gangestad & Snyder, 2000, p. 546). Self-monitoring affects the way individuals shape their social worlds and present themselves in social contexts (see Gangestad & Snyder, 2000, for a review). High self-monitors are characterized by an acuteness of perception and understanding of social situations (Snyder, 1974). They have been shown to possess better social interaction skills, higher flexibility and a tendency to

emerge as group leaders (Zaccaro, Foti, & Kenny, 1991). High self-monitors are generally more likely to have an interest in developing reputations that express social status, and thus, often a more pragmatic, somewhat opportunistic approach to relationships (Snyder, 1987, pp. 68-69). Due to their heightened awareness of social and informational cues, high self-monitors have been found to be more successful in eliciting conferrals of status, and to be more perceptive in recognizing patterns of exchange relations connecting members of their social group (Flynn, Reagans, Amanatullah, & Ames, 2006; Kilduff & Krackhardt, 1994). Moreover, they appear to be particularly motivated to act on the cues available to them in ways that help cultivate and maintain a favorable public image. Like social pragmatists, high self-monitors constantly attempt to impress others in order to win their approval and respect (Gangestad & Snyder, 2000, p. 531). Taken together, these arguments lead us to expect that the need for a positive public appearance will affect high self-monitors' decision-making in choosing friends. To enhance their social standing among their peers they will be more likely to approach relationship building instrumentally, and hence establish close personal ties to people who are perceived as powerful in the group.

> *Hypothesis 1b (self-monitoring)*: *High self-monitors will be more likely than low self-monitors to develop friendship ties with people who are perceived as powerful.*

4.2.2 Relationship Partners of the Informally Powerful

The previous three hypotheses concern the conditions that influence the formation of social ties to the high-power organizational actors. The next describes our expectations regarding the other side of a dyad linked by a power relationship. Specifically, whom do the individuals who are perceived as powerful build close personal relationships with?

Previous research has shown that high-power individuals are to a great extent guided by self-serving interests, seeing relational partners as objects that will help them meet their goals (Fredrickson & Roberts, 1997; Gruenfeld et al., 2003). Considerable empirical evidence confirms that the personal relationships of high-power individuals are often strategic rather than purely affiliative (Burt, 1998; Karuza & Brickman, 1981). Powerful actors feel relatively unconstrained about pursuing any opportunity that will help them further their personal interests (Lee & Tiedens, 2001). Friendship connections or social liking may therefore be used by the powerful to maintain their esteemed position through obtaining additional relevant resources, implementing agendas more easily, forming coalitions and alliances. Powerful people may be "trading" friendship for deference by building close personal relationships with group members who hold them in high esteem.

In addition to the instrumental motives governing exchange relationships, tie formation is also driven by the normative obligation to comply with reciprocity expectations (e.g., Molm, Schaefer, Collett, 2007). According to the reciprocity principle, individuals should not benefit from another person's benevolence without providing an appropriate

compensation. Thus, the reciprocity norm prescribes that those who receive are also supposed to give: individuals should reward those who reward them, like those who like them, and become friends with those whom they consider think of them as friends. In line with this pure form of social exchange reasoning, empirical research has shown that exchange relationships between organizational members are based primarily on the expectation that benefits will be given in return for benefits received (Winstead & Derlega, 1986). Employees in organizations are involved in a network of exchange of favors, driven by the principle: "reward your friends, punish your enemies" (Strauss, 1973, p. 358). In durable exchange relations, the reciprocity concern may affect decision-making in choosing friends. Deference and allocation of esteem may, therefore, be "reciprocated" by friendship. Building on these social exchange theory assumptions, we formulate the following hypothesis:

Hypothesis 2 (reciprocity): If A sees B as powerful, then B will be more likely to befriend A.

4.2.3 Benefits of the Friendship to Informally Powerful

In the remainder of this section we derive a hypothesis concerned with the potential consequences of the instrumental approach to friendship choices. In particular, we address the question of whether the exploitation of one's social capital advantages can be beneficial for employees in enhancing others' perceptions of their social status.

Social networks in organizational settings serve as "prisms" through which others' reputations and potentials are perceived, as well as "pipes" through which resources flow (Podolny, 2001). Employees' social relations with powerful co-workers not only provide them with access to a variety of valuable resources, but also channel information about them to others in the organization (Burt, 1992). Given that the time of high-status actors is scarce and has high opportunity costs (Blau, 1955), merely being considered worthwhile of their attention may enhance individual's personal reputation through a so-called "basking in reflected glory" effect (Cialdini et al., 1976; Kilduff & Krackhardt, 1994; Mehra et al., 2009). To that end, a friendship tie to a powerful person has a positive signaling effect: individuals who are perceived to be connected to resourceful others may come to be seen as resourceful themselves. By basking in superiors' reflected glory, one may extract great benefits by building a reputation as a powerful actor (Pfeffer & Fong, 2005).

It has been argued that the "basking in reflected glory" phenomenon involves a deliberate strategy on the part of individuals to enhance their public images by proclaiming bonds to successful others (Cialdini et al., 1976). This notion is consistent with the social exchange theory assumption regarding an individual's tendency to evaluate their relationships in terms of costs, rewards, and investments. People initiate relationships in the hope of maximizing the rewards relative to the costs, and hence focus on persons from whom they expect the greatest rewards. The perceived status of exchange partners acts like a distorting

prism, filtering attributions concerning the focal individual (Podolny, 2001). Being friends with the powerful increases one's own social capital value within a given social circle, thereby providing strong incentives for others to perceive one as a potentially useful contact.

Drawing on these insights from resource exchange theory and psychological research on the "basking in reflected glory" phenomenon, we predict that to the extent that the observer is also driven by interest and reward, his or her perception of an individual's power will be affected by that individual's connections to high-status others. This leads to the following hypothesis:

> *Hypothesis 3 (basking-in-reflected-glory): The friends of people one perceives as powerful will also come to be seen as powerful (If A perceives B as powerful, and B has a friendship tie to C, then A will come to perceive C as powerful).*

4.3 Method

4.3.1 The Research Setting

Longitudinal data were collected in one site of a medium-sized Dutch non-profit organization at three time points six months apart, namely in spring 2009, autumn 2009, and spring 2010. The organization was an independent, subsidized, regional child protection institution.

The research questions we have posed and the subsequent hypotheses we have formulated place strict requirements on the type of data that had to be collected. First, this sort of inquiry requires sociometric panel data collected from all members of the group under study. It also requires a relatively small setting that would allow collecting reliable data on complete networks using self-administered questionnaires. A specialized kindergarten providing treatment for children with problems in their social, psychological, and / or physical functioning met these specific criteria. At the time of the first measurement wave, the site had 44 employees, among them social workers, behavioral scientists, specialists (such as physiotherapists or pediatricians), and administrative and household staff. The site was rather autonomous in the sense that there was limited contact between its employees and organizational members outside the site. Within the kindergarten, children were divided into five groups. A team of two to six employees supervised each group of children. The teams did not have formally assigned team leaders or supervisors; instead, the site was managed centrally by one (female) manager. Most of the employees worked part-time, and only two of them were male.

The sample size varies between the three measurement waves because some employees joined or left the site in the course of the study. In the first wave, 30 out of 44 employees (68.2%) completed the survey. In the second wave 28 out of 42 employees (66.7%), and in the third wave 34 out of 38 employees (89.5%) participated. The mean age

of the employees at the beginning of the study was 35.98 (range: 23-60; *SD* =10.65), and on average they had been employed in the organization for six and a half years (*M* = 6.49, *SD* = 6.80; *Mdn* = 3; *minimum* = 1, *maximum* = 23).

4.3.2 Measures

Measures included network data capturing the power and friendship relationships between employees, as well as individual-level data on the strategic relational skill and personality (i.e., self-monitoring disposition) of employees. Both power and friendship were incorporated as dependent network variables in the analysis.

Peer-rated informal power. Due to the relatively small size of the site under study, in each of the three measurement waves informal power relations among employees could be addressed directly by presenting the respondents with a roster of the names of all employees working at the site. Building on previous work on power reputation in organizations (e.g., Brass, 1984; Pfeffer, 1981a), individual power was assessed by asking each respondent to indicate on a 5-point Likert scale ranging from 1 (very little influence) to 5 (very much influence) how much influence each colleague has on the state of affairs within the site. The question was worded as follows (rough translation from Dutch): "It is often the case at work that some people are more influential than others. For example, people who have clear ideas concerning work-related issues, and who communicate their ideas to others can influence the opinions of their colleagues. Please indicate for each of the following people the degree of influence that they have on the state of affairs within the site".

In this study, attributed power is conceptualized as a phenomenological construct: someone is powerful when he is perceived as such by others (Pfeffer, 1977). This approach to assessing power perceptions is similar to and consistent with earlier research on the linkages between social networks and leadership perceptions (for a review, see Shaw, 1964), as well as more recent work focused on social networks and leader reputations (e.g., Mehra, Dixon, Brass, & Robertson, 2006; Mehra et al., 2009). Also building on insights from previous work (e.g., Brass, 1984; Burkhardt & Brass, 1990; Brass & Burkhardt, 1993), we chose to use the term "influence" rather than "power" in the questionnaire. Although some scholars have made definitional distinctions between the two concepts, distinctions of this sort are not common in everyday usage of the words. Furthermore, the term "power" frequently involves undesired negative connotations (Pfeffer, 1981a) that might have biased the results of the study.

Based on the informal power question we retrieved a directed, valued adjacency matrix for each measurement wave capturing the power nominations of the employees. However, our analytical approach elaborated below required a dichotomized power variable: we therefore recoded all of the "influential" and "very influential" nominations as 1, and the remaining types of nominations as 0. This meant that we could identify the present power

relations in the network (i.e., actor A nominates actor B as powerful), and create a directed, binary adjacency matrix for each measurement wave, where 1 stood for presence of power nomination, and 0 implied absence.

Friendship. In addition to inquiring about the power relations among employees, respondents were asked to describe their social relationships with every other employee on the following 5-point Likert scale: 1 (very difficult), 2 (difficult), 3 (neutral), 4 (friendly), and 5 (good friend). The wording of the question is roughly translated from Dutch as follows: "With some colleagues we have a very good relationship. To some we would even confide personal things. With other colleagues, however, we can get along less well. The following question asks about your relationship with your colleagues. How would you describe your relationship with each of the following people?"

Employees' answers to this question provided us with a directed, valued network capturing the quality of the dyadic relationships within the network, as reported by each individual. However, again the chosen analytical approach required a dichotomized friendship variable. Friendship nominations appeared to have a bimodal distribution, with the majority answering with codes 3 or 4. The "friendly" and "good friend" relationships were therefore recoded as 1, and all other types of relationships as 0 (the term "friendly" in Dutch has a stronger connotation than in English translating more directly to "friendship-like"). As a result, we retrieved a directed, binary adjacency matrix for each measurement wave, where 1 stood for presence of friendship nomination in the network, and 0 implied absence.

Strategic relational skill. Previous research on political skill has identified a wide range of influence behaviors that people engage in within the workplace (see e.g., Ferris et al., 2005; Kipnis et al., 1980; Kyl-Heku & Buss, 1996; Lund et al., 2007). In the current research we wanted to capture employees' general tendency to actively connect with co-workers and managers in an attempt to influence them. We assumed that people who are inclined to devote substantial time and effort networking with others are likely to have and implement better strategic relational skills. In each measurement wave employees were asked to indicate on a 7-point Likert scale ranging from 1 (very unlikely) to 7 (very likely) how likely they are to communicate a lot with colleagues and managers when they are trying to influence them. The wording of the question is roughly translated from Dutch as follows: "The following statement describes things people sometimes do to influence their colleagues and supervisors, as well as the decisions and activities within the work team. How likely are you to do this?". The obtained ratings did not vary much in-between measurement waves and were highly correlated (wave 1-wave 2: $r = 0.62$, $p < 0.05$; wave 1-wave 3: $r = 0.79$, $p < 0.001$; wave 2-wave 3: $r = 0.56$, $p < 0.05$). Hence, we included strategic relational skill at the first wave as a constant actor covariate in the analysis.

Self-monitoring. Employees' self-monitoring orientation was measured at the first time point with a selection of eight items from the 13-item self-monitoring scale proposed by Lennox and Wolfe (1984). Responses to these items were given using a 7-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree). The overall reliability coefficient (i.e., Cronbach's α) for the scale was 0.66. Examples of items included are: "I have the ability to control the way I come across to people, depending on the impression I want to give them", "My intuition is quite good when it comes to understanding others' emotions and motives", "I have found that I can adjust my behavior to meet the requirements of any situation I find myself in". The self-monitoring score derived from the respondents' answers is used as a continuous variable indicating the probability that an individual is a high or a low self-monitor (Gangestad & Snyder, 1985). Self-monitoring was included as a constant actor covariate in the analysis.

Control variables. Given that the employees in the organization under study worked in teams, we wanted to rule out differences in friendship formation and power attributions based simply on proximity. We therefore controlled for formal team structure. Employees' tenure (in years) and hierarchical level in the organization (formal function) served as additional control variables. Finally, we controlled for an actor's preference for attaching to popular others (i.e., others who are often named as powerful or as a friend – "preferential attachment"), as well as several common network configurations, which we will further elaborate upon in the Analysis Strategy section.

Formal team membership. As mentioned earlier, the setting being studied was organized into five teams with sizes ranging from two to six employees. Data on the sites' formal work team structure was provided by the organization prior to the start of the study, enabling us to test whether working in the same team (i.e., high proximity) may lead to more friendship ties or power attributions between employees. Formal team membership was included as a nominal varying actor covariate in the analysis.

Hierarchical level. Prior to the study, we also obtained information on the employees' formal functions within the site. These data allowed us to investigate whether employees in similar hierarchical positions tend to befriend or attribute power to each other more often. Hierarchical level was included as a constant actor covariate in the analysis.

4.3.3 Analysis Strategy

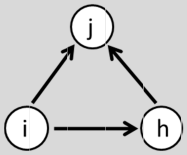
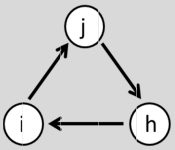
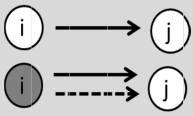
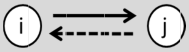
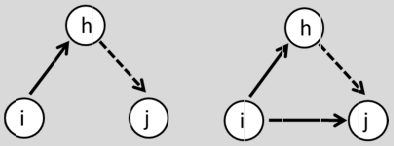
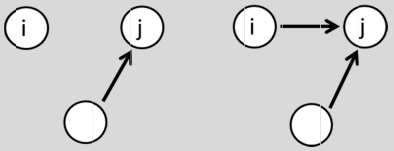
Recent methodological innovations have made it possible to statistically estimate models for repeated measures of social networks through actor-based simulations (Snijders et al., 2010). In the current work we use this stochastic modeling approach to study the co-evolution of friendship and power networks in a real-life organizational setting. The basic principles of the actor-oriented model are discussed in detail in Snijders and colleagues (2010).

In our analysis, both friendship network and power network serve as explanatory and as outcome variables. A test of several dependent (outcome) networks is referred to as *multiplex* test. We analyzed the data for this paper using RSIENA (Ripley & Snijders, 2011) which allows the study of multiplex dependent networks, and thus the testing of whether a change in one dependent network is causing a change in another dependent network. To the best of our knowledge, this is one of the first studies to investigate multiplex co-dependent networks longitudinally in an organizational setting.

A verbal description and a visual presentation of the effects estimated in our model are presented in Table 4.1. The model included control variables, which can be classified into endogenous network configurations and actor covariates. The same control variables were used for modeling the friendship and the power network. Endogenous configurations are predominant structures in the network that need to be controlled for because they instantiate known interdependencies in network data. More specifically, we controlled for out-degree (the tendency to create new ties), reciprocity, transitive triplets (the tendency to close triads), and 3-cycles (the tendency for generalized reciprocity). Changes in the network are expressed with rate parameters. The actor covariates, namely strategic behavior, self-monitoring, formal team membership, hierarchical level and tenure controlled for exogenous effects on the dependent networks.

To test our hypotheses, so-called "multiplex parameters" were added to the estimation. These comprised effects regarding the nature of the relationship between friendship and power ties on the dyadic, triadic, and network levels of analysis. The model parameters are estimated using an iterative stochastic approximation algorithm. The estimation was performed using the Method of Moments (MoM, Snijders, Steglich, & Schweinberger, 2007). Starting at the first observed network and based on tentative values for the model parameters, network evolution trajectories are simulated. Comparison of simulated and observed networks on model-relevant dimensions allows the iterative improvement of the parameter values until convergence is achieved.

Table 4.1 *Verbal Description and Visual Presentation of the Effects in Multiplex SIENA*

Effect	Verbal Description	Visual Presentation
Rate	Basic parameter indicating the number of opportunities to make changes in a certain network	
<u>Endogenous Network Effects</u>		
Out-degree	Ego's tendency to create ties in a network	
Reciprocity	Preference for reciprocated ties between ego and alter in a network	
Transitivity	Ego's preference for ties with friends' friends (indicator of network closure)	
3-cycles	Ego's preference for relationship cycles (negative values denote preference for hierarchical ties in the networks; positive values indicate generalized reciprocity)	
<u>Exogenous Network Effects</u>		
Out-degree multiplex (H1)	Ego's preference for ties to alters in network B, when ego has a tie with alter in network A	
Attribute ego x out-degree multiplex (H1a, H1b)	Ego's attributes affect ego's preference for a tie to alter in network B, when ego has a tie with alter in network A	
Reciprocity multiplex (H2)	A tendency for ego's ties in network A (out-degree) to be reciprocated with alter's nominations in network B (in-degree)	
Basking-in-reflected-glory multiplex (H3)	Ego's preference for a tie to "j" in network A, when ego has a tie to "h" in network A, and "h" had a tie to "j" in network B	
Preferential attachment	Ego's preference for ties with popular others (e.g., others who attract many power attributions)	

Note. Parts of this table were taken from Steglich, Snijders and Pearson (2010), and Ellwardt, Steglich and Wittek (2010). "i" represents ego, "j" represents alter, and "h" represents tertius. Solid line represents ties in network A; dashed line represents ties in network B.

4.4 Results

4.4.1 Descriptive Statistics

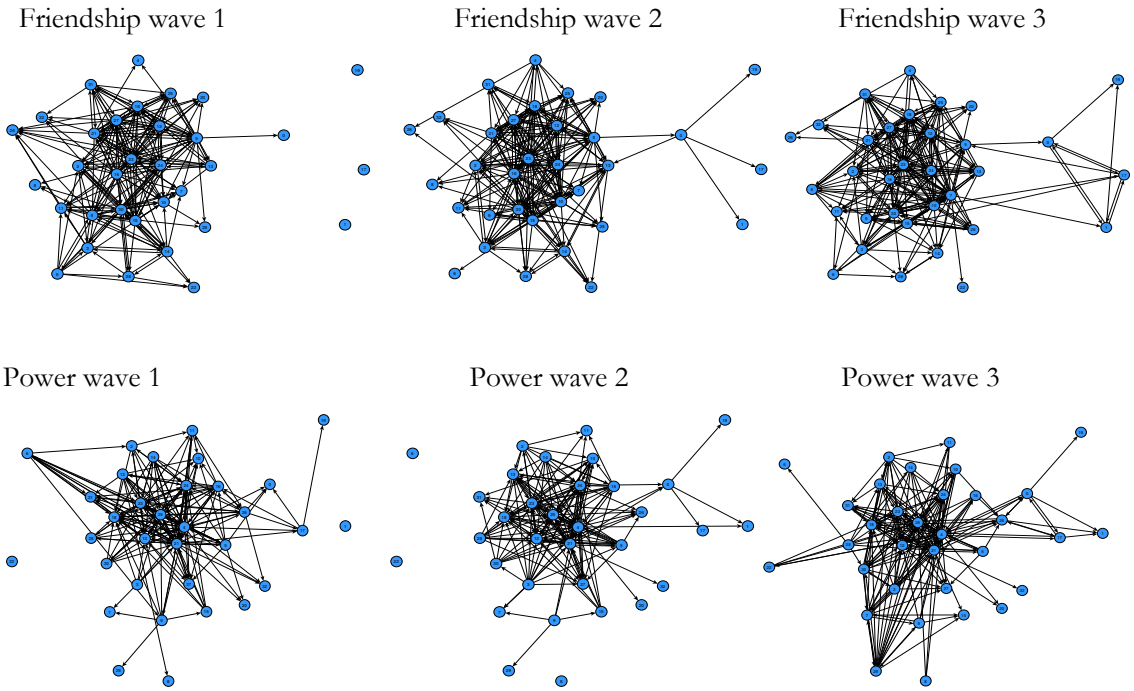
The descriptive statistics of the analyzed network and individual attribute variables are summarized in Table 4.2. On average employees attributed power to eight to eleven colleagues, and chose ten to thirteen colleagues as friends. The observed Distance parameters in power and friendship networks are reasonably large, providing sufficient statistical power for identifying the network model at hand. The Jaccard indices for the two periods are close to 0.5 in both dependent networks, implying that we should have reasonable power to estimate statistical parameters (Snijders, 2001). Importantly, the strategic relational skill and self-monitoring variables appeared to be uncorrelated (r = 0.23, *ns.*). This confirms that these variables measure two independent theoretical constructs. The friendship and power networks at three measurement points are depicted in Figure 4.1. The density of the networks was comparable at the first and last time points. In the second wave, however, the friendship network was somewhat denser than the power network.

Table 4.2 *Descriptive Statistics of Networks and Individual Attributes: Ties, Density, Means, Standard Deviations, Distance and Jaccard Similarity Coefficients*

Variable	Ties	Density	*M*	*SD* [a]	*SD* [b]	*D* [c]	*J* [d]
Wave 1 (*N*=30)							
Power	312	0.24	11.56	8.05	5.86	-	-
Friendship	310	0.22	11.48	4.59	7.13	-	-
Strategic relational skill	n/a	n/a	5.59	1.18	-	n/a	n/a
Self-monitoring	n/a	n/a	4.78	0.59	-	n/a	n/a
Wave 2 (*N*=28)							
Power	247	0.16	9.88	6.93	5.10	86	0.48
Friendship	331	0.21	12.73	4.21	8.64	121	0.49
Wave 3 (*N*=34)							
Power	238	0.13	8.21	7.11	4.57	108	0.46
Friendship	301	0.15	10.38	4.36	7.47	127	0.51

Note. [a] The reported statistics are calculated based on *in-degree*. [b] Statistics are calculated based on *out-degree*. [c] *Distance coefficient* (D) refers to the number of ties for which change in the period could be observed. It is a lower boundary for the number of microsteps needed to get from one network observation to the next, and as such gives an indication about the statistical power for identifying parameters for the network evolution part of the model. [d] *Jaccard Similarity Coefficient* (J) provides indication of how much network turnover occurs in-between measurement waves (Snijders, 2001).

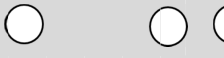
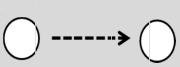
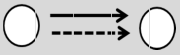
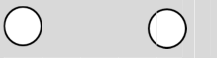
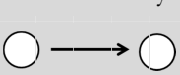
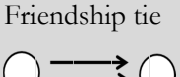
Figure 4.1 *Friendship and Power Networks at Three Measurement Points*



Note. The pictures were created with the network visualization software Visone 2.6.3. Only those employees who had worked in the organization site at all three time points of data collection are represented in the network pictures.

The descriptive information regarding the relationship between the two dependent networks, power and friendship, is provided in Table 4.3. Specifically, an overview of counts and percentages of employee dyads in which ego and alter were connected with a power tie only, a friendship tie only, both power and friendship ties, or not connected is given. The upper half of the table plots ego's nominations at the beginning of a time period against the end of this time period (the obtained dyad counts for the three measurement points were summed up), providing an indication of ego's stability in nominating alters. In the lower half of the table we plotted ego's nominations against alter's nominations to obtain descriptive information regarding the responses that ego's nominations cause in alter (i.e., multiplex reciprocity). This allowed us to make preliminary causal interpretations of change in dyads throughout the examined time period.

Table 4.3 *Relationship between Power and Friendship: Dyad Counts and Row Percentages across Periods*

End of Period: Ego's Nominations of Alter					
	No tie	Power tie only	Friendship tie only	Power and friendship tie	Total
					%
Beginning of Period: Ego's Nominations of Alter					
No tie	468	37	51	8	564
	82.98	6.56	9.04	1.42	100
Power tie only	51	102	7	15	175
	29.14	58.29	4.00	8.57	100
Friendship tie only	88	2	133	25	248
	35.48	0.81	53.63	10.08	100
Power and Friendship tie	14	22	45	124	205
	6.83	10.73	21.95	60.49	100
End of Period: Alter's Nominations of Ego					
	No tie	Power tie only	Friendship tie only	Power and friendship tie	Total
					%
Beginning of Period: Ego's Nominations of Alter					
No tie	225	88	63	25	401
	56.11	21.95	15.71	6.23	100
Power tie only	99	37	21	19	176
	56.25	21.02	11.93	10.80	100
Friendship tie only	81	19	67	54	207
	39.13	9.18	32.37	26.09	100
Power and Friendship tie	46	13	45	62	180
	25.56	7.22	25.00	34.44	100

Note. Reading example: a power tie by ego at the beginning of a period was associated with a friendship tie by alter at the end of a period in 21 out of 176 dyad cases (11.93%). Missing responses are excluded from the dyad counts.

As can be seen in Table 4.3, ego's power attributions at the beginning of the period coincide with ego's friendship nominations or a combination of friendship and power attributions at the end of the period (in sum 12.57%). Ego's friendship nominations, however, are associated with ego's power attributions or a combination of power and friendship ties to a somewhat lesser degree (in sum 10.89%). Moreover, ego's power attributions tend to be reciprocated with friendship nominations over time (11.93%). In contrast, ego's friendship ties were somewhat less likely to be reciprocated with power attributions by alters (9.18%). This descriptive information yields mixed results, providing only weak support for our hypotheses. To obtain a much clearer insight into the nature of relationship between friendship and power, a strict hypothesis test using multivariate analysis is required. We therefore now elaborate on the results from the Multiplex SIENA models.

4.4.2 Results from Multiplex SIENA

The results of the multivariate analysis are reported in Table 4.4. First, in the gain hypothesis (H1) we suggested that power perceptions may generate new friendship relations - perceiving someone as powerful will increase the likelihood of befriending him / her in the future. The results show a positive relationship between power perceptions and friendship, but the effect does not reach statistical significance (θ = 0.29, *ns.*), suggesting that overall, employees were not more inclined to befriend informally powerful co-workers. We further specified our first hypothesis and predicted that in contrast to the rest, relationally skilled employees (H1a), as well as the high self-monitors (H1b) are to a greater extent driven by instrumental motives, and so may be particularly prone to befriend high-power co-workers. In line with our expectation, the strategic relational skill effect yields significant results (θ = 0.10, $p < 0.05$), implying that organizational members with better relational skills are more likely, over time, to develop friendship ties with co-workers who are perceived as powerful. The self-monitoring effect points in the expected positive direction, and is marginally significant (θ = 0.16, $p < 0.10$). Hence, the assumption that high self-monitors are more prone, over time, to befriend the high power co-workers receives weak support in our data. In sum, these results suggest that not all employees are equally inclined to befriend the powerful, rather that the more instrumentally oriented ones build personal ties to high power colleagues.

The second hypothesis (H2) posits that friendship ties originating from the informally powerful actors will be directed towards those who attribute power to them. Lending support to this prediction, the significant estimate in our model shows that power attributions tend to be "reciprocated" with friendship nominations in employee dyads (θ = 0.55, $p < 0.05$). This implies that informally powerful group members, over time, befriend those who perceive them as powerful. Interestingly, our analysis also demonstrates that friendship relations do not lead to reciprocation by power relations over time (θ = -0.27,

ns.). Hence, seeing someone as a friend does not increase the likelihood of power allocations to them.

The basking in reflected glory hypothesis (H3) predicted that the friends of co-workers whom one perceives as powerful will also come to be seen as powerful. This assumption lacks support in our data (θ = 0.24, *ns.*): even though the respective effect points into expected positive direction, it fails to reach statistical significance in the analysis. Hence, the basking in reflected glory hypothesis was rejected.

We now turn to the discussion of additional parameters contained in the SIENA analysis. The amount of change within networks is modeled by rate parameters for the two time periods (see bottom of Table 4.4). The respective estimates show that change was apparent in our data. We also controlled for endogenous configurations in friendship and power networks. Our results suggest that symmetry and transitivity characterize the pattern of growth of the friendship network (indicated by significant positive reciprocity and transitive triplets parameters, and a negative 3-cycle parameter), but not of the power network. This pattern of results implies that the mechanisms of growth appear to be different for friendship and power networks.

Actors' preference for attaching to popular others (i.e., others who are often named as powerful or as a friend) is modeled by a preferential attachment parameter. The likelihood of a person to attract new power ties appeared to be proportional to the power ties they have already acquired. In the friendship network, however, the likelihood of an employee attracting new friendship ties was not related to the number of ties this person had already attracted.

Finally, the covariates included in the model affected the dependent networks. Being a member of the same work team and having the same formal function within the department triggered the formation of friendship ties between employees. Working in the same team also increased the likelihood of power attributions in employee dyads. Similarity in tenure, however, did not affect friendship, nor power.

Table 4.4 *Results from Multiplex SIENA on the Co-evolution of Friendship and Power Perceptions*

	Friendship Network		Power Network	
Parameter	***Estimate***	***SE***	***Estimate***	***SE***
Controls				
Out-degree (density)	-2.20	0.40***	-3.69	0.73***
Reciprocity	0.79	0.28**	0.35	0.29
Transitive triplets	0.19	0.02***	0.03	0.08
3-cycles	-0.23	0.05***	-0.09	0.05
Tenure similarity	0.37	0.23	-0.01	0.27
Same team membership	0.79	0.28**	1.68	0.61**
Same formal function	0.32	0.14*	0.22	0.26
Preferential attachment	0.06	0.11	0.49	0.16**
Main effects and interactions				
Befriending the powerful (H1)	0.29	0.22	-	-
Attributing power to friends	-	-	-0.11	0.26
Strategic relational skill x befriending the powerful (H1a)	0.10	0.05*	-	-
Self-monitoring x befriending the powerful (H1b)	0.16	0.09°	-	-
Power attribution "reciprocated" by friendship (H2)	0.55	0.22*	-	-
Friendship "reciprocated" by power	-	-	-0.27	0.24
Basking-in-reflected glory (H3)	-	-	0.24	0.17
Network Dynamics (Changes)				
Rate period 1	12.73	1.67***	7.83	1.52***
Rate period 2	11.37	1.65***	10.65	1.91***

Note. [a] The *t*-values are obtained by dividing the parameter estimate by its standard error;

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ° $p < 0.10$

4.5 Discussion

Drawing on an approach rooted in social capital and exchange theories, the current study set out to examine the dynamics and co-evolution of informal power and interpersonal friendships in an organizational setting. The results obtained offer an insight into the specific conditions under which social ties in organizations become instrumentalized, and used by employees to further their personal interests.

We have presented evidence that not everyone in the group is equally inclined to build close personal relationship to high power co-workers. Rather, in line with our expectation, more instrumentally oriented employees with better strategic relational skills, as well as high self-monitors, tended to befriend powerful colleagues. Further, we found that informally powerful group members, over time, befriend those who perceive them as powerful. Finally, our results suggest that in the setting under study bonds to the informally powerful do not yield substantial benefits in terms of personal reputation.

Our study offers an interesting contribution to the social exchange framework. This theoretical perspective implicitly assumes that all individuals evaluate their relationships in a similar way – initiating personal ties in the hope of maximizing the rewards relative to the costs, and extracting the most benefits. In this research, however, we demonstrate an apparent link between individual dispositions and exchange dynamics. It seems that people differ in the degree to which they are driven by instrumental motives. Compared to others, relationally skilled individuals and high self-monitors have a heightened tendency to approach relationships pragmatically, seeing relational partners as objects that can help them meet their goals (Ganagestad & Snyder, 2000; Perrewé et al., 2000). This result offers a noteworthy refinement of the social exchange perspective, and shows that considerations of interest and reward play a prominent role in the creation of personal relationships for some people, but not others. Employees with stronger instrumental orientation are more motivated to pursue and use the opportunities associated with the links to the higher status colleagues. Notwithstanding the current findings, the conditions under which individual social relations are transformed into a tool for accomplishing personal goals remains a relatively unexplored area of research. Shedding more light on the behavioral micro-foundations underlying the power and friendship relations in organizations may therefore be a useful endeavor in future studies (Agneessens & Wittek, 2011).

Our findings also extend past research on employees' interpersonal relationships by showing that informally powerful actors "reciprocate" the power attributions to them with friendship nominations. On one hand, this result underpins the reciprocity principle inherent to social exchange theory (Molm et al., 2007): individuals tend to reciprocate relations over time by rewarding those who reward them, and by liking those who like them. On the other hand, it further underlines the notion that certain types of people frame their social relations differently from the rest. Rather than seeking closeness and connection to the people with

whom high power actors themselves have relationships, they "trade" friendship for deference, as it appears to be a means to a personal end of maintaining their power position. This is consistent with previous findings that high power actors tend to create dense relational structures for the purpose of acquiring more power and maintaining their independence (Burt, 1998). To that end, social relations with group members who hold one in high esteem are instrumental in bringing more power to the informally powerful (Lee & Tiedens, 2001).

The present research suggests that the initiation of a friendship tie appears to be influenced by the presence of another type of relationship, in this case power. The evolution of friendship, however, has usually been studied independently of power (e.g., Knecht, 2007; Van de Bunt, Van Duijn, & Snijders, 1999), thereby underestimating the substantial role that power perceptions play in friendship formation. Our work fills this gap and points to power perceptions as a theoretically important construct that should be incorporated in the study of friendship dynamics. Apparently, rather than hindering friendship formation, perceptions of power may serve as a pathway to establishing close ties to actors who can potentially be useful in trying to accomplish personal goals in a social environment. This holds for both high and low power individuals. The instrumental use of social relationships is further facilitated by particular individual characteristics, making certain types of people (i.e., strategically skilled, high self-monitors, the powerful) especially prone to invest in exchange relations with an expectation of a valuable return.

Past research has shown that individuals' reputations in the eyes of others can be enhanced by the mere perception that they are socially connected to prominent group members (e.g., Kilduff & Krackhardt, 1994; Mehra et al., 2009). Even though a personal link to the powerful appears to be beneficial on the dyadic (2 person) level (as demonstrated by the findings already described), our results suggest boundaries on the potential gain from this relationship on the triadic (3 person) level. Whereas the basking in reflected glory effect may appropriately describe cultivation of desirable reputations in some organizational settings, it may not apply in all organizational contexts. We conducted our study in a small non-profit setting where employees are part of interdependent teams working closely together in a collaborative manner. In this type of organization, connections to prominent others may be a less important cue about colleagues' informal power. Individuals required to cooperate in groups are likely to exchange information about each other, and generally are aware of each other's informal status: in the setting we studied, then, the degree of influence is more likely to be understood through direct experience of working with a person, rather than through his or her proclaimed bonds to the informally powerful. We believe that in larger organizations with a more competitive culture, connections to the powerful may generate greater benefits in the market for power and esteemed position in the group. We call for future research in a broader set of organizational contexts to generalize our results.

The following limitations of our study should be taken into account. Firstly, our data was collected in one department of a non-profit organization in the Dutch child-care sector. The participants were mainly female pedagogic professionals, and the work environment could best be characterized as very sociable and cooperative. More research is needed to assess the generalizability of our findings to a broader range of organizational settings. In particular, the size and the organizational culture may vary between organizations. This, in turn, may affect the way in which the power and friendship dynamics we have reported here unfold. Although our exploratory ethnographic study supports the notion that power and status competition are not the driving forces behind the relational dynamics in this particular organization, we nevertheless showed that there is variance in people's approach to building relationships. The more strategically and instrumentally oriented employees were clearly more driven by the personal goal of getting recognition and a position of elevated status. The fact that we were able to identify these tendencies even in a small scale and cooperative setting suggests that they may be even more prevalent in larger and more competitive organizations.

Secondly, in formulating our hypotheses regarding the relationship between power and friendship, we have made an implicit assumption that the person who receives a power attribution is aware of the sender's perception of him / her. Future research could examine power relationships between employees in a more controlled manner (e.g., by means of field observations or experiments) to supplement our reliance on sociometric ratings. This would allow us to understand more fully how power perceptions are signaled and communicated in the workplace.

Finally, future research might benefit from a different operationalization of employees' strategic relational skill. To get a more comprehensive measure of participants' political skill and influence tactics, one might consider using multi-item scales assessing a broader set of individual strategic abilities and behaviors.

To conclude, we have provided evidence for the need to specify the social exchange approach when studying the mechanisms that underlie the relationship between power and friendship in organizations. We encourage further empirical inquiries of the ways in which different types of people build distinctively different patterns of social ties in the workplace. Moreover, we took the first steps towards developing a theoretical framework of the formation of friendship ties both to and from the informally powerful individuals. We hope our results will stimulate future research on the dynamics and co-evolution of power and friendship networks in real-life organizational settings.

Chapter 5

Disentangling the Relation between Interpersonal Trust, Personal Sense of Power, and Job Satisfaction: A Moderated Mediation Analysis

The current study examines the relationships between interpersonal trust, personal sense of power and job satisfaction. We suggest that the sense of power mediates the association between trust and job satisfaction. Moreover, trust is assumed to moderate the sense of power-job satisfaction relation. We integrate these assumptions into a novel and parsimonious model of moderated mediation, and test whether the proposed mediation effect is stronger for individuals who report lower trust levels. Two-wave panel data from 82 employees was used to test the proposed hypotheses utilizing regression analyses with non-parametric bootstrapping. Results suggest that the level of trust moderates the mediation process: the strength of the mediated effect increased along with a decrease in the level of trust. Personal sense of power mediates the trust-job satisfaction relation, if employees experience lower levels of trust in their colleagues. Practical implications and directions for future research and theory advancement are discussed.

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5 DISENTANGLING THE RELATION BETWEEN INTERPERSONAL TRUST, PERSONAL SENSE OF POWER, AND JOB SATISFACTION: A MODERATED MEDIATION ANALYSIS

5.1 Introduction

An extensive and growing body of literature addressing the topic of employee well-being has evolved over the past 40 years. One of the central dimensions of employee well-being, *job satisfaction*, has become the focus of considerable research attention for organizational sociologists, and it remains one of the most frequently studied concepts (see e.g., Spector, 1997, for an overview). Job satisfaction has been described as "how people feel about their jobs and different aspects of their jobs. The extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs" (Spector, 1997, p. 2). Hence, it may be conceptualized as an individual's affective evaluative response to the job (Barsade & Gibson, 2007; Hackman & Oldham, 1980), involving a cognitive process with the evaluation or a judgment, centering on the comparison of the observed reality about the work situation with some idea about the ideal situation (Fisher, 2000, p. 185).

People spend more waking hours at work than elsewhere: a workplace therefore constitutes an important social unit, and a significant source of social relations. The bulk of empirical evidence surrounding the factors that facilitate and inhibit employee job satisfaction has led researchers to conclude that social capital generates a high potential for achieving objectives and is one of the key determinants in contributing to personal well-being and quality of life in the workplace (e.g., Lowe & Schellenberg, 2001; Requina, 2003). Social capital is a multidimensional concept and it has been defined in various ways depending on the specific perspective used to address it (Bourdieu, 1986; Burt, 1992; Coleman, 1988).

A common conception of social capital as generalized *trust* in others assumes that trust brings benefits to individuals and their organizations. In fact, theoretical and empirical work has long acknowledged and documented a variety of positive effects produced by trust, including improved communication among group members, more organizational citizenship behaviors, higher performance, less conflict, and not surprisingly greater job satisfaction (see Dirks & Ferrin, 2001, for a review). In line with relatively straightforward social capital reasoning, it has been proposed that trusting relationships affect job satisfaction by providing access to strong social support, better opportunities to mobilize advice and help, as well as valuable goods and resources (see Hurlbert, 1991; Umberson et al., 1996; Requina, 2003).

However, while valuable findings have been generated by research focused on the benefits of trust, little has been done to examine the effects of mistrust (i.e., lesser levels of trust in fellow colleagues) on employees' attitudes and perceptions. In particular, when trust is low, and thus employees are likely to be less motivated towards their jobs and experience negative accompanying consequences, what other aspects of their work lives may fill this void by offering benefits that can keep employees motivated and still being satisfied?

This study attempts to extend previous research by incorporating an additional, often downplayed, component of the social capital focused on power issues. Power is a fundamental aspect of organizational life that received considerable attention from the theorists in the field. Although previous research provides important insights about how power possession affects a variety of psychological processes, individual decisions and behaviors (e.g., Fiske, 1993; Pfeffer, 1992), it does not consider the potential impact of individual self-power perceptions on the relationships between trust and workplace outcomes, such as job satisfaction. We believe this omission is significant, because people are likely to react to their own perceptions rather than to some objective reality (Thomas & Velthouse, 1990; Spreitzer, 1996). Hence it is an individual's *perceived self-power* that would most likely shape his or her attitudes and organizational behaviors. Moreover, personal perceptions of power are not a simple function of formal position; that is, two actors with the same formal rank do not necessarily have the same level of perceived self-power. Thus, we suggest that employees' internal representations of their power relative to others may be an important, yet overlooked, component in understanding their attitude towards work.

5.1.1 Linking Trust, Power, and Employee Job Satisfaction

Social capital may contribute to one's power position in the group by, for example, facilitating the flow of information and providing a better opportunity to access and use the valuable resources embedded in the social networks (Lin, 2002). Research on the interplay between trust and power has shown that belonging to a support network characterized by trust may increase an individual's sense of personal power (Crozier, 1964), and promote one's sense of control and competent performance (e.g., Brass & Burkhardt, 1993; Ergeneli et al., 2007; Erturk, 2010).

A recent theory proposed that power influences the relative activation of the two broad and fundamental behavioral systems: the behavioral approach and inhibition systems (Keltner, Gruenfeld, & Anderson, 2003). Empirical evidence suggests that these two behavioral systems help individuals pursue rewards and avoid threats, respectively, by coordinating diverse affective, cognitive, and behavioral processes (Anderson & Berdahl, 2002; Galinsky, Gruenfeld, & Magee, 2003). Feelings of elevated power are posited to activate the approach system, and have been shown to positively affect individual well-being through increased access to rewards, and material (e.g., financial resources, physical comfort) and social (e.g., higher esteem, praise, positive attention) resources. Feeling powerless, on the

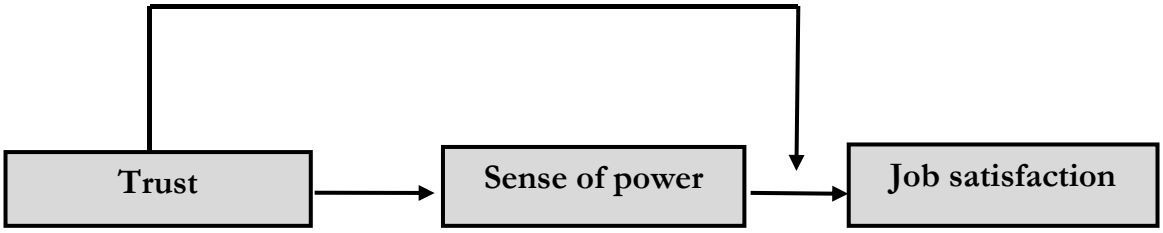
other hand, is proposed to activate the inhibition system, and is associated with enhanced dependency, frustration, panic, and general negative affect.

In the current paper we will argue that trust (support)-driven explanations of employee well-being, rooted in traditional social capital reasoning, tend to neglect the additional social capital "face" focused on issues of power, and in particular the potential impact of employees' personal power perceptions on their job satisfaction. By assuming a direct trust – satisfaction link, crucial additional power-related mechanisms triggered by trust are likely to be ignored, and thus lead to a biased and incomplete understanding of why people feel satisfied at work. This article attempts to add to our understanding of the psychological processes behind social capital and its impact on well-being at work by developing and empirically testing a conceptualization of how trust and personal sense of power combine to affect individual job satisfaction within organizational settings.

It might be imagined that studies including trust and power to explain employee well-being would be common; surprisingly, however, we could not identify any research efforts utilizing a framework that theoretically links the two different "faces" of the social capital. We propose that recent advancements in the research on power perceptions and their impact on individual well-being offer a fruitful insight into the potential interrelationships between trust, power, and satisfaction. The purpose of this study is to explore the implications of the approach/inhibition theory of power by examining the role of the personal sense of power in the relation between trust and job satisfaction. We will argue that, on one hand, trust might be contributing to one's feelings of elevated power, thereby increasing one's job satisfaction. On the other, we suggest that the proposed mechanism might differ according to whether employees are experiencing high or low trust. When trust is lacking, employees' personal sense of power is likely to become a substantial motivation source that keeps them satisfied by "compensating" for the benefits they fail to receive from trust.

As illustrated in Figure 5.1, this study sets out to investigate whether trust influences job satisfaction through its impact on individual's sense of power (mediation), and whether the strength of the personal sense of power-job satisfaction association depends on the level of trust (moderation). Our aim, however, is to test a parsimonious model of moderated mediation which integrates these two assumptions (Model 1; Preacher, Rucker, & Hayes, 2007). In particular, we are interested in whether personal sense of power mediates the effect of trust on job satisfaction as a function of the underlying level of trust. Components of this model (simple mediation and moderation) have previously been tested, and are now combined to a model of moderated mediation, thereby satisfying one major principle of theory building, that of parsimony (Preacher et al., 2007). To the best of our knowledge, this is the first study that addresses the research question posed through a moderated mediation perspective.

Figure 5.1 *Conceptual Moderated Mediation Model*



The following sections elaborate further upon the theoretical background and hypotheses that link trust, personal sense of power and job satisfaction, as well as the data and the methods used. In section four, utilizing a two-wave panel design, we test the proposed mechanisms and present the results. We conclude with a discussion of the implications and limitations of the study.

5.2 Theoretical Background and Hypotheses

5.2.1 Trust-Job Satisfaction Link

Social capital reasoning is a widely accepted theoretical foundation for predictions about the impact of trust on employee well-being. Interpersonal trust represents an integral element of social capital, and it has been discussed as a concept that is crucial for organizational effectiveness. Trust develops between two people through a mutually reinforcing process. Feelings of trust are communicated through the disclosure of accurate and relevant information, the acceptance of another's influence, and recognition of interdependence (Zand, 1972). Interpersonal trust has been defined as a confident expectation held by an individual or group that the word or promise of another individual or group can be relied on (Rotter, 1971, 1980). In line with previous research on organizational trust, we define it as a person's willingness to be vulnerable to another party whose behavior is not under his or her control (Hosmer, 1995; Lewicki, Tomlinson, & Gillespie, 2006; Zand, 1972).

Trusting relations that rely on openness, sharing of information and mutual support are assumed to enhance employee satisfaction. It has been shown that when a worker is in a context of greater trust and communication, the degree of personal well-being at work increases (Requina, 2003). Higher job satisfaction is achieved in settings where employees respect the positions of others, where ideas are expressed freely and honestly without hidden motives, and where group members listen to and empathize with others (Ancona et al., 1996; Proenca, 2007). According to this common notion, employees embedded in the social relationships characterized by trust therefore perceive high levels of support from their

colleagues, feel motivated towards their jobs, and can be expected to experience positive accompanying consequences, such as greater job satisfaction.

5.2.2 Trust-Personal Power Link

With its roots in the common social capital reasoning, the proposed direct link between trust and employee satisfaction disregards an additional component of the social capital, namely power, thereby neglecting its potential impact on the critical employee attitudes. Power is potentially an important predictor of crucial workplace outcomes, and variations in power have been shown to have a tremendous impact on the success or failure of many organizational processes, and upon individual level, group level, and whole organizational level outcomes. We propose that simply by taking into consideration the power issues that might influence the process by which trust affects employee satisfaction, we may be able to provide a better explanation of the rather complex relationship between trust and employee satisfaction.

Although the concept of power is often conceived of as a structural variable and as a property of social relationships (Emerson, 1962), it has been suggested that power is embedded within individual minds, and can therefore be regarded as a psychological property of the individual (Anderson, John, & Keltner, 2005; Bargh, Raymond, Pryor, & Strack, 1995; Bugental, Blue, & Cruzcosa, 1989; Chen, Lee-Chai, & Bargh, 2001; Galinsky et al., 2003). Individuals can form internal representations of their power relative to others in specific contexts or relationships (Bugental et al., 1989), or more generally, across contexts and relationships (Anderson et al., 2005). The sense of power is anchored in relational experiences and is a psychological extension of the socio-structural landscape. In the current work, we are specifically interested in the interrelationships between these personal power perceptions of the employees, and their perceived trust in colleagues and job satisfaction.

The need to focus on perceived self-power stems from the compelling arguments linking one's embeddedness in trusting social relations with a heightened sense of personal power. Belonging to a support network characterized by trust has been found to increase an individual's interdependence with important organizational constituents and, in turn, to increase the individual's sense of personal power (Crozier, 1964). Interactive experiences among peers have been proposed to provide opportunities to acquire information and support to promote one's sense of control over work conditions, personal power and competent performance (Brass & Burkhardt, 1993; Kahn, 1990; Kirmeyer & Lin, 1987; Laschinger, Sabiston, & Kutscher, 1997; Speer & Hughey, 1995). Access to supportive peers whom an individual trusts enhances their feelings of potency, autonomy and impact (Corsun & Enz, 1999; Manz & Sims, 1993; Proenca, 2007; Thomas & Velthouse, 1990). Positive trusting relationships with colleagues and managers appear to strengthen ties to the organization, and to enhance the individual's sense of self-worth as a contributing organizational member. Employees embedded in a context of greater trust have been shown

to possess a higher perception of competence and control, and to be more likely to believe they can influence the organization's important outcomes, processes, and strategies (Ergeneli et al., 2007; Erturk, 2010).

5.2.3 Personal Power-Job Satisfaction Link

Employees may feel satisfied at work not only because of the organizational climate that generates acceptable levels of trust, but also because of the sense of personal power itself - feeling in control and fully capable of putting one's ideas into practice.

The approach/inhibition theory of power makes clear predictions about the effects of power perceptions on individual attitudes and behaviors. According to this recently proposed model, perceived self-power is likely to trigger the relative activation of the behavioral approach and inhibition systems (Fowles, 1980; Gray, 1982, 1987, 1991; Higgins, 1997, 1998; Newman, 1997; Sutton & Davidson, 1997). It is suggested that an elevated sense of power activates the approach system, and is associated with an action-orientation toward the material and social environment leading to an increased access to rewards and other valued resources throughout one's immediate social circle. Individuals with greater levels of perceived self-power are likely to control the resource flows and potential opportunities in organizations. They may feel more self-efficacious in using their abilities to get rewards or to deal with the downside of risk (Anderson & Galinsky, 2006). Moreover, they are likely to encounter less interference from others when pursuing rewards (Keltner et al., 1998; Winter & Stewart, 1983). Having low power, on the other hand, is proposed to activate the inhibition system. People with low power are often subjects of more social and material threats (Anderson & Berdahl, 2002; Fiske, 1993; Hall & Halberstadt, 1994). Feelings of powerlessness and inability to keep control over one's job are likely to result in anxiety, stress and alienation. These affective states triggered by the activation of the behavioral inhibition system may further hinder one's ability to pursue valued material and social resources.

The approach/inhibition theory has been supported by a number of studies suggesting that individuals randomly assigned to high-power conditions through a variety of means pay more attention to positive and rewarding information, experience more positive affect, express themselves more freely in social interactions and pursue rewards more assertively (Anderson & Berdahl, 2002; Galinsky et al., 2003; Langner et al., 2005; Smith & Bargh, 2008).

In a workplace, a feeling of personal power associated with the relative freedom from others' power provides a sense of achievement and notable satisfaction that is likely to influence overall job satisfaction. Furthermore, the increased access to material and social resources (Buss, 1996; Keltner et al., 1998; Operario & Fiske, 2001) experienced by the powerful has been shown to positively affect employee satisfaction. Feelings of low power, on the other hand, are associated with a more negative affect, intent to leave, and lower

motivation, job satisfaction, commitment, and trust in the organization (Greenberg & Barling, 1999).

5.2.4 The Mechanisms

Given the above noted insights from existing theories and earlier research, the question is how trust and personal sense of power combine to affect individual job satisfaction in organizations. To address this question, the current study uses a parsimonious moderated mediation framework.

The approach/inhibition theory provides a promising link between one's sense of power and well-being. In fact, it has been proposed that individuals with greater levels of self-power are likely to reap the benefits of access to diverse resource flows and organizational rewards, and thus feel more satisfied. The personal sense of power creates a sense of fulfillment and satisfaction among employees. It is further assumed to reduce perceived helplessness, resulting in enhanced motivation and satisfaction. At the same time, we propose that the level of trust in one's colleagues positively affects the degree of job satisfaction experienced, as well as contributing to an elevated sense of personal power. Accordingly, we hypothesize that power is likely to be the mechanism by which trust is linked with satisfaction.

Hypothesis 1 (simple mediation): Personal sense of power will mediate the relationship between trust and job satisfaction:

- *Trust will be positively related to job satisfaction and to personal sense of power*
- *Personal sense of power will be positively related to job satisfaction, and when personal sense of power is controlled, the significant relationship between trust and job satisfaction will be reduced or no longer significant.*

An alternative, but not incompatible, perspective on the combined effect of trust and power on employee satisfaction suggests that personal sense of power will be differentially important depending on the level of trust towards the other group members. Employees experiencing lower levels of trust in their colleagues may be more likely to rely on their personal sense of power as a source of motivation.

Common and rather straightforward social capital reasoning would lead us to believe that if an employee is embedded in a supportive atmosphere characterized by trust, their personal sense of power may be less important, as support in relational experiences with other group members provides the motivation they need. On the other hand, based on the insights derived from the approach/inhibition theory of power, we propose that the heightened sense of power is also a crucial motivator associated with a more pro-active orientation towards one's work objectives, increased access to a variety of resources and rewards, and - consequently - with being more satisfied. Extending the research from the

social capital and approach/inhibition perspectives to the current study of employees within the organization, we might expect to find that particularly in work environments where trust in other group members is lacking, one's personal sense of power is likely to act as the primary motivator. That is, feeling powerful should be especially important for those employees who trust their colleagues less. An employee experiencing low levels of trust might feel demotivated, alienated, or frustrated, and is likely to become dissatisfied with the job, unless his or her increased sense of personal power can offset the lack of motivation. Thus, when trust is low, the associations between personal sense of power and job satisfaction become stronger as feelings of elevated power will potentially compensate for the drawbacks of the lack of trust.

Although we have argued that the relationship between trust and job satisfaction is mediated by personal sense of power, we also expect the strength of this relationship to differ across employees experiencing different trust levels. Specifically, we hypothesize that the mediation by personal sense of power is particularly strong among people reporting low levels of trust in their fellow colleagues.

> *Hypothesis 2 (moderated mediation). Trust will moderate the strength of the mediated relationship between trust and job satisfaction via personal sense of power, such that the mediated relationship will be stronger when the trust is lower.*

5.3 Data and Method

5.3.1 The Organization

Data were collected among a random sample of employees in one medium-sized Dutch non-profit organization in autumn 2009 and spring 2010. The organization was an independent, subsidized, regional child protection institution. It comprises approximately 650 employees and has 15 sites spread across one of the regions in The Netherlands. Among the employees, there were social workers, behavioral scientists, medical doctors, therapists, and administrative staff. The main objective of the organization is to render professional assistance to children at risk and their respective families. The aim is to provide the children with a stable social context, to restore their mental health and to offer the parents counseling and guidance. The organization uses diverse intervention techniques, such as visits to the children's homes, supported housing for juveniles and special kindergartens.

The organization might be best described as a rather non-competitive setting. There are no formal promotion regimes and few opportunities for career advancement. Most employees are female working part-time. Although power processes are present in the current setting, then, they are not as salient as in organizations characterized by a more competitive culture, such as commercial companies or investment banks. However, small formal power differences do not imply that there are no informal power differences between

employees. As pointed out by Krackhardt and Hanson (1993), much of the real work in organizations happens independently of the formal organizational structure. In other words, often employees form networks of relationships across formal functions and divisions to accomplish tasks fast. Increasingly, information is found and work gets done through informal networks rather than through traditional organizational hierarchies (Cross & Prusak, 2002). The informal organization is therefore the driving force behind the generation of new ideas, organizational decision-making processes, and employee action. Every informal network has its prominent "go-to" people whose role is usually explicit to other group members who may depend on them to solve problems, and to provide advice and valuable information. These informally powerful employees may exert enormous influence on group dynamics and on how things are done within an organization, and consequently are likely to experience greater levels of self-power. We believe that studying the relationships between trust, personal sense of power and employee satisfaction in a setting characterized by a more cooperative culture and solidified informal organization is particularly interesting and insightful, since the existence of suggested effects would imply that they are not a mere artifact, and that in a larger, and more competitive context they are likely to be even stronger. That is, the proposed impact of employees' self-power perceptions on the relationships between trust and job satisfaction is likely to be even more pronounced in the entrepreneurial settings with a more competitive culture and extensive informal networks.

5.3.2 Sample

All data were collected at two points in time via paper and pencil questionnaires that were sent out to participants' home addresses. Information about participants' job satisfaction at the second time point was used as a dependent variable. Data on organizational members' trust in colleagues and personal sense of power were collected at the first time point. While reverse causality is an issue in cross-sectional studies that only examine the variables of interest at the same time point, using longitudinal data where the ordering of the events is known allows us to establish the direction of the effects of interpersonal trust and personal sense of power on job satisfaction.

The two-wave panel sample comprised 82 participants, 19 of them male (23.2%) and 63 female (76.8%), with 29 working full-time (35.4%) and 53 part-time (64.6%). The mean age of the employees was 42.78 (range: 24-61; SD = 10.64), and on average they had been employed for 10.45 years (SD = 8.98; Mdn = 7; *minimum* = 1, *maximum* = 36). 18 of the participants had a managerial role in the organization (22%).

5.3.3 Measures

Dependent Variable

*Job satisfaction***.** Based on the information obtained from the qualitative interviews conducted prior to the study, we constructed a five-item job satisfaction scale specifically for

the organization studied. The employees were asked to rate their satisfaction with different aspects of their job (e.g., tasks, salary, collaboration with colleagues, workload, etc.) on a seven-point Likert scale ranging from 1 (very dissatisfied) to 7 (very satisfied). Cronbach's α for the job satisfaction scale was 0.72.

Independent Variables

*Trust in colleagues***.** The six-item scale for interpersonal trust at work adapted from Cook and Wall (1980) was used to assess whether respondents trusted their colleagues. The participants were asked to rate their level of trust in colleagues on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The sample items included: "I can trust that my colleagues will do what they promised to do", "I can trust that my colleagues will give me help if I need it". Cronbach's α for the trust in colleagues scale was 0.92.

Sense of power. The eight-item sense of power scale adapted from Anderson and colleagues (2005) asked participants to report their generalized beliefs about the power they have in their relationships with their colleagues and supervisors. The respondents were asked to rate their agreement with items such as "I can get colleagues to listen to what I say", and "I think I have a great deal of power" on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). In line with the previous research the sense of power scale showed high internal consistency with Cronbach's α of 0.85.

Control Variables

Information on gender (0 = man, 1 = woman), type of contract (0 = full-time, 1= part-time; based on working hours per week), formal role (0 = non-manager, 1 = manager), and tenure (in years) of the organizational staff came from the personnel records. These variables were included in the analyses to control for possible response biases in our sample.

5.3.4 Analytical Procedure

Simple Mediation

To test our mediation hypothesis, we used regression analyses with bootstrapping. According to Baron and Kenny (1986), three regression equations must be estimated to test mediation properly. First, the dependent variable (i.e., job satisfaction) is regressed on the independent variable (i.e., trust) and must show a significant relationship. Second, the proposed mediating variable (i.e., sense of power) is regressed on the independent variable and that association must be significant as well. Finally, the dependent variable is regressed on the independent and mediating variables entered simultaneously. This equation has to show that the mediating variable is significantly related to the dependent variable and that the effect of the independent variable on the dependent variable has reduced or disappeared after controlling for the mediator. Evidence for complete mediation is given when the direct association between trust (IV) and job satisfaction (DV) becomes zero, while allowing the

sense of power (Me) to mediate this relationship. Partial mediation is applicable when this direct relationship becomes significantly lower.

To test the strength and significance of the indirect effect, we applied the conservative Sobel test as well as bootstrapping (Preacher & Hayes, 2004; Preacher et al., 2007). An exact normal distribution is likely to be found only in large samples. In small samples, on the other hand, the distribution is not necessarily normal, and often is not even symmetrical (Bollen & Stine, 1990). Bootstrapping is a nonparametric approach to effect-size estimation and hypothesis testing that makes no assumptions about the shape of the distributions of the variables or the sampling distribution of the statistic (see e.g., Efron & Tibshirani, 1993; Mooney & Duval, 1993). This approach allows getting around the power problem introduced by asymmetries and other forms of non-normality in the sampling distribution of the indirect effect (Bollen & Stine, 1990; Lockwood & MacKinnon, 1998; Shrout & Bolger, 2002). The test produced by the bootstrap approach is not based on large-sample theory (Preacher & Hayes, 2004), and hence it can be applied to small samples like ours with more confidence. Bootstrapping enabled us to calculate a bootstrap estimate of the indirect effect, an estimated standard error, and the 95% confidence intervals of the mediation effect. The approach generates *k* random samples (*k* in our case is 5,000) from the original distribution. This process yields *k* estimates of the indirect effect, which serve as empirical, nonparametric approximations of the sampling distributions and thereby allow for non-normal multivariate distributions in the data (Preacher & Hayes, 2004).

Moderated Mediation

In order to test whether the indirect effect depends on trust levels (Mo), we follow the procedures suggested and elaborated by Preacher and colleagues (2007). The coefficients were estimated independently in two regression analyses using bootstrapping. First, personal sense of power (Me) was regressed on trust (IV). Subsequently, job satisfaction (DV) was regressed on trust (IV), personal sense of power (Me), and the interaction between trust and personal sense of power (Mo*Me). An overall effect of the IV on the Me is a necessary precondition for moderated mediation. A significant interaction effect (Mo * Me) on job satisfaction is only indicative of moderated mediation if trust (IV) also affects one's sense of power.

Given the significant interaction, regression analyses are conducted on several values of the moderator to probe the indirect effect, and obtain the degree to which mediation varies depending on the level of the moderator. Following Preacher's and colleagues (2007) recommendation, normal-theory tests of the hypothesis that the conditional indirect effect equals zero are conducted at the mean, as well as one standard deviation above (+1 *SD*) and below (-1 *SD*) the mean values of the moderator. Bias-corrected bootstrapping was applied as it produces more accurate confidence intervals (MacKinnon, Lockwood and Williams 2004). Furthermore, an extension of the Johnson–Neyman technique to moderated

mediation was applied (Preacher et al., 2007). This technique tests the significance of the indirect effect on a large range of values of the moderator until the value of the moderator is identified for which the conditional indirect effect is just statistically significant at a set α-level of 0.05. Values of the moderator for which the mediation effect is significant constitute the region of significance of the indirect effect.

5.4 Results

5.4.1 Descriptive Statistics

Table 5.1 shows means, standard deviations, and intercorrelations among variables measured in our study. The reported correlations show that gender, type of contract and tenure had nonsignificant associations with the outcome variable. Given the small number of cases in our sample, and the nonsignificant relationships between these variables and job satisfaction, we decided not to include them in the final analyses[6]. Moreover, controlling for one's formal role seemed redundant because of its high correlation with type of contract (r = -0.41; $p < 0.001$) – managers were significantly overrepresented among the employees working full-time.

The descriptive results are of specific interest for two additional reasons. First, they provide preliminary support for the proposed mediation hypothesis. Trust was significantly related to the personal sense of power and job satisfaction, thereby fulfilling the first and the second condition for mediation. There was also a significant association between sense of power and job satisfaction implying that the third condition for mediation holds true. Second, these significant correlations suggest that the hypothesized moderator variable (i.e., trust) is a quasi-moderator rather than a pure moderator[7].

[6] We conducted preliminary analyses including the control variables. Their inclusion or exclusion in the simple mediation and moderated mediation models led to small changes in the obtained estimates, but did not affect the general pattern of results and our conclusions. Thus, in the remainder of this paper we report the results of the analyses without the control variables.

[7] According to the typology of the moderator variables proposed by Sharma and colleagues (1981), quasi moderators are the moderator variables that interact with the predictor variable and are significantly related to the predictor and/or the dependent variables. A moderator that interacts with the predictor variable while having a negligible correlation with either the predictor and/or the dependent variable is referred to as pure moderator.

Table 5.1 *Means, Standard Deviations, and Intercorrelations (N = 82)*

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Gender [a]	0.77	0.43	-						
2. Part-/Full-time contract [b]	0.65	0.48	0.44***	-					
3. Formal role [c]	0.22	0.42	-0.20+	-0.41***	-				
4. Tenure	10.45	8.98	-0.21+	-0.16	-0.04	-			
5. Job satisfaction	4.83	0.93	0.02	-0.01	0.23*	0.10	-		
6. Trust	5.61	0.93	0.18	0.10	-0.06	0.09	0.27*	-	
7. Sense of power	5.38	0.79	0.05	-0.16	0.37**	0.04	0.33**	0.48***	-

Note. [a] Reference category is *female*; [b] Reference category is *part-time*; [c] Reference category is *manager*;

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Table 5.2 presents the correlation between sense of power and job satisfaction for employees reporting below average and above average levels of trust. As can be seen, sense of power and job satisfaction appear to be significantly correlated only in the low trust group ($r = 0.36$, $p < 0.05$). This descriptive result provides a preliminary support for the proposed idea that the sense of power might be an important motivator particularly for employees experiencing low trust in their colleagues.

Table 5.2 *Correlation between Sense of Power at T1 and Job Satisfaction at T2, for Employees Reporting Below Average and Above Average Levels of Trust.*

	Level of trust			
	Below average (N=34)		*Above average (N=48)*	
Correlation	***r***	***p***	***r***	***p***
Sense of power-job satisfaction	0.36	<0.05	0.20	0.18

5.4.2 Simple Mediation

Regression analyses with bootstrapping were conducted to study the mediating effect of personal sense of power (T1) on the prospective relation between trust (T1) and job satisfaction (T2). As can be seen in Table 5.3, results suggest that all of Baron and Kenny's criteria for mediation were established: trust at T1 was positively and significantly related to job satisfaction at T2 ($\beta = 0.27$, $t = 2.50$, $p < 0.05$), and positively predicted the personal sense of power at T1 ($\beta = 0.48$, $t = 4.84$, $p < 0.001$). Furthermore, personal sense of power

was significantly related to job satisfaction even after controlling for trust ($\beta = 0.31$, $t = 2.21$, $p < 0.05$). As hypothesized, the regression analyses further showed that, the direct effect of IV on DV, controlling for the Me was not statistically different from zero, indicating no relationship between trust and job satisfaction after controlling for the personal sense of power ($\beta = 0.14$, $t = 1.20$, $p = 0.23$).

Table 5.3 *Results of Regression Analyses (N = 82): Mediation by Personal Sense of Power of the Trust – Job Satisfaction Relationship (Hypothesis 1)*

DV Predictor	***B***	***SE B***	***β***	***R²***
Step 1				
Job satisfaction				0.07
Trust	0.27	0.11	0.27**	
Step 2				
Sense of power				0.23
Trust	0.40	0.08	0.48***	
Step 3				
Job satisfaction				0.13
Sense of power	0.31	0.14	0.26*	
Trust	0.14	0.12	0.14	

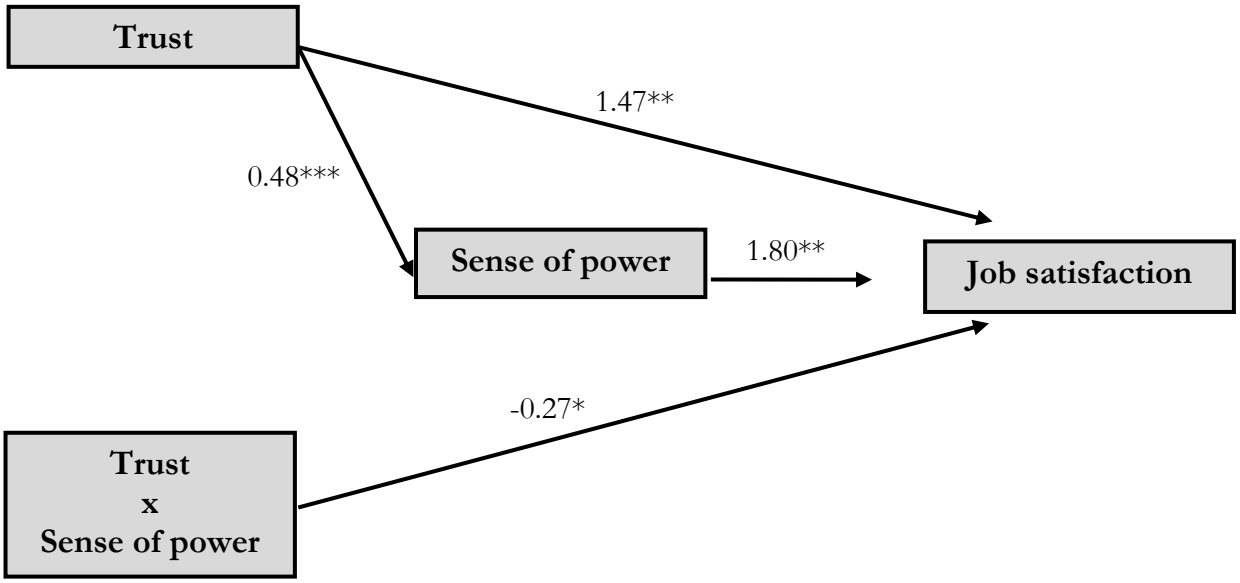
Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The Sobel test ($Z = 1.97$, $p = 0.05$) demonstrated that this reduction of the direct association between trust and job satisfaction appears to be significant. Since the conservative Sobel test is based on the questionable assumption that the distribution of the indirect effect follows a normal distribution under the null hypothesis, it may yield an underpowered test of mediation. To further validate the obtained Sobel test results, we used the *bootstrap approach* to generate the bootstrapped estimate of the indirect effect. Results from the bootstrapping test suggest that the true indirect effect is estimated to lie between 0.0040 and 0.2583 with 95% confidence. Because zero is not in the 95% confidence interval, we can conclude that the indirect effect is indeed significantly different from zero at $p < 0.05$ (two-tailed). These results provide support for the hypothesis that personal sense of power at T1 completely mediates the relationship between trust at T1 and job satisfaction at T2.

5.4.3 Moderated Mediation

Hypothesis 2 predicted that the indirect effect of the personal sense of power for the trust-job satisfaction relationship will be strengthened by low levels of trust. One of the first assumptions for moderated mediation was supported by our results for Hypothesis 1, which demonstrated that personal sense of power was significantly predicted by trust. Subsequent analyses supported the remaining moderated mediation assumptions and showed that job satisfaction was predicted by trust (β = 1.47, $p < 0.01$), sense of power (β = 1.80, $p < 0.01$), and the interaction between trust and sense of power (β = - 0.27, $p < 0.05$). The negative sign of the significant interaction effect is consistent with the interpretation that the indirect effect is larger for employees reporting lower trust levels (see Figure 5.2).

Figure 5.2 *Results of Regression Analyses for Moderated Mediation (Hypothesis 2)*



Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Given the significant interaction term, we further validated the obtained results by testing whether the magnitude of the conditional indirect effect of trust via personal sense of power is different for employees across low, mean, and high levels of trust. As can be seen in Table 5.4, in line with our expectations personal sense of power mediated the effect of trust on job satisfaction at the mean, and especially at low levels (-1 *SD*) of trust, but not when trust was high (+1 *SD*). In particular, the strength of the conditional indirect effect increased along with a decrease in the level of trust (β = 0.12, p = 0.05 at *M*, and β = 0.22, $p < 0.01$ at -1 *SD*).

The results of the normal-theory tests were further verified using bootstrapping. The confidence intervals for the conditional indirect effect at low, mean and high levels of trust

were generated using 5000 bootstrap resamples. Setting the value of the moderator to 4.69 (-1 *SD*) yielded a bootstrap 95% bias corrected and accelerated *CI* of {0.09, 0.41}. Repeating this procedure for trust values of 5.62 (Mean) and 6.54 (+1 *SD*) yielded 95% bias corrected and accelerated *CI*s of {0.02, 0.26} and {-0.14, 0.16}, respectively. Because the first two intervals do not contain zero, we may conclude that the conditional indirect effect at low and mean levels of trust is significantly different from zero at $\alpha = 0.05$. At high levels of trust the interval contains zero, hence the conditional indirect effect is not significantly different from zero. Thus, bootstrapping corroborates the results of the normal-theory tests.

Table 5.4 *Bootstrapped Indirect Effects of Trust on Job Satisfaction via Personal Sense of Power at Specific Values of the Moderator (Trust) (Hypothesis 2)*

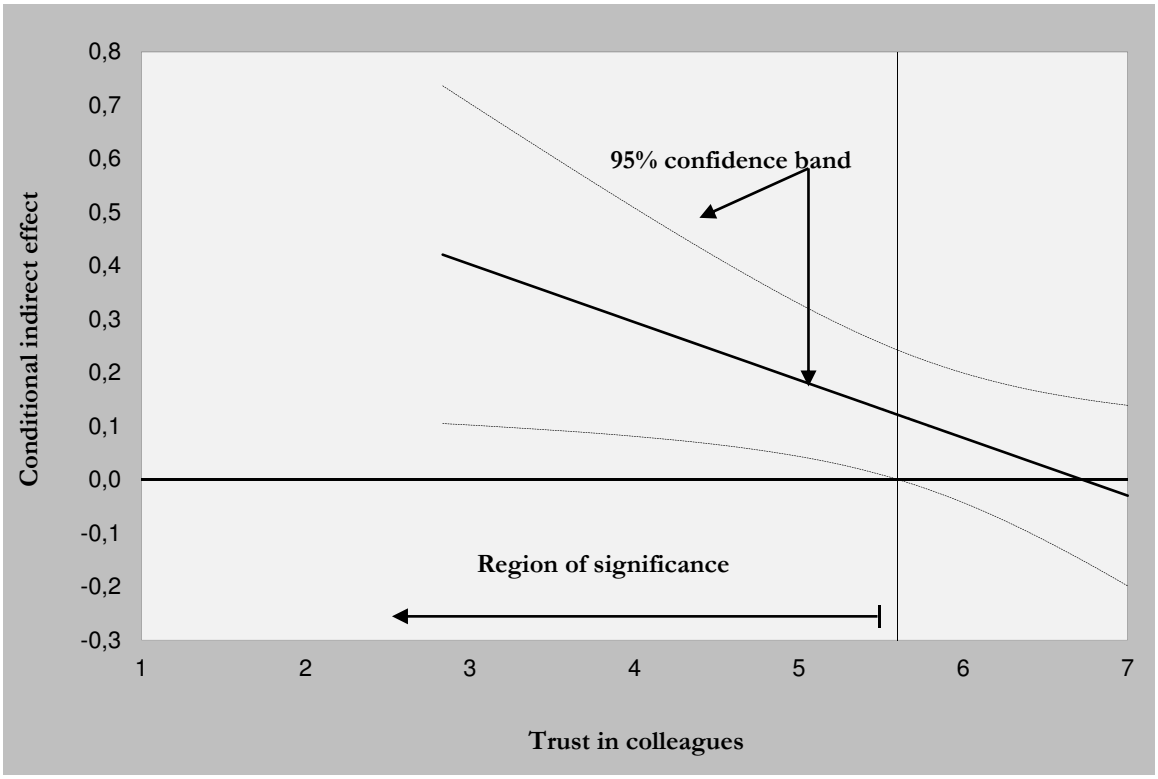
	Job satisfaction			
Trust	***β***	***SE***	***LL BCA***	***UL BCA***
-1 SD	4.69**	0.08	0.09	0.41
Mean	5.61*	0.06	0.02	0.26
+1 SD	6.54	0.07	-0.14	0.16

Note. ** $p < 0.01$, * $p < 0.05$; $N = 5000$ Bootstrapping resamples; *LL BCA* and *UL BCA* = Lower level and Upper level of the bias corrected and accelerated confidence interval for $\alpha = 0.05$.

Additionally, the results of the Johnson-Neyman technique suggested that the indirect effect is significant at $\alpha = 0.05$ for any value of trust below 5.61 on the 7-point scale. In Figure 5.3 the conditional indirect effect of interest is plotted at all values of the moderator within the range of the data along with the corresponding 95% confidence band. The horizontal line denotes indirect effects of zero. The vertical line represents the boundary of the region of significance.

The indirect effect of trust on job satisfaction via personal sense of power is significant (region of significance) where the confidence band does not contain zero. The plot clearly illustrates that the indirect effect is significantly different from zero for any value of trust below 5.61. Hence, in line with our expectations, the indirect effect increases along with the decrease in the level of trust. Thus, Hypothesis 2 was supported.

Figure 5.3 *Moderated Indirect Effect of Trust on Job Satisfaction through Personal Sense of Power with a 95%-Confidence Band (Hypothesis 2)*



5.5 Discussion

The current study set out to examine how interpersonal trust and personal sense of power combine to affect individual job satisfaction in the workplace by testing an integrated moderated mediation model and analyzing whether the mediation effect of the trust-satisfaction relationship by sense of power varies due to different levels of trust.

Overall, the results provide support for the parsimonious model of moderated mediation. Specifically, we showed that individuals' level of trust in their colleagues influences their sense of power, which in turn affects their job satisfaction. We also found that personal sense of power mattered the most for employees who reported lower levels of trust in their colleagues.

Our first major finding of the mediating effect of one's sense of power on job satisfaction implies that much of the positive influence of trust on employee satisfaction occurs through the elevated sense of personal power. Additionally, our finding of the main effect of personal sense of power on job satisfaction further emphasizes its importance for the satisfaction with the job. The mediating effect of personal sense of power in the relationship between trust and job satisfaction may be interpreted as a facilitating mechanism. Employees who trust their colleagues experience an enhanced sense of

belonging to a support network, which makes them feel more powerful, and thus they are more likely to feel satisfied with their jobs. Alternatively, the mediating effect of personal sense of power may be viewed as a proximal motivational mechanism that accounts for the relationship between trust and job satisfaction.

These findings can be explained by elements of the approach/inhibition theory of power and the social capital theory. First, they are in line with previous research showing that an elevated sense of power activates the approach system by boosting one's confidence in own abilities to reach set objectives, thereby providing a sense of achievement and notable positive affect (e.g., Anderson & Galinsky, 2006), which in turn accounts for the overall satisfaction with the job. Second, our results also support the conventional social capital notion that embeddedness in social relationships characterized by trust is an important source of individual motivation and well-being (Bourdieu, 1986; Burt, 1992; Coleman, 1988; Lowe & Schellenberg, 2001; Requina, 2003). However, by integrating the insights provided by the two theories, we were able to further demonstrate that much of the positive influence of trust on employee attitudes with regard to their job occurs through its crucial impact on individual sense of personal power. These findings are consistent with previous research showing that social environments characterized by trust boost one's feelings of power by signaling that one's opinions are valued and taken seriously (Ergeneli et al., 2007; Erturk, 2010), which in turn serves to enhance an employee's job satisfaction (Corsun & Enz, 1999; Crozier, 1964; Manz & Sims, 1993; Proenca, 2007; Quinn & Spreitzer, 1997; Thomas & Velthouse, 1990). The identified mechanism is also consistent with a previously suggested notion that trust is an essential element and an important facilitator of organizational success, but is not sufficient on its own (Shaw, 2007): trust has been described as a means to an end, not an end by itself. Hence, trusting relationships with fellow colleagues help to create the essential environment, which further facilitates the development of perceptions of competence and control among the employees (i.e., greater self-power), which in turn contribute to higher job satisfaction.

The most interesting contribution of the current study is an indication that the process where trust in the other group members empowers and thereby fortifies higher job satisfaction levels might work differently in subgroups of individuals. We have shown that lower levels of trust strengthened the relationship between trust, personal sense of power, and job satisfaction through the link between sense of power and satisfaction. These results therefore further support the notion that people with lower levels of trust in their colleagues are more likely to derive satisfaction from feeling powerful and in control. The logic behind this finding is that especially when the trust level is low, an employee would be more likely to focus on other aspects of the workplace to obtain the support and motivation he or she fails to receive from the relationships with colleagues. In this regard, personal sense of power becomes more important because feeling in control may fill the void created by the lack of trust, and thus contribute to employee's motivation.

We believe that both the moderated mediation model developed and our empirical findings make an important contribution to both the social capital and power research streams by providing an insight into the general process by which interpersonal trust affects employee job satisfaction, and particularly the role of one's sense of power therein. It appears that trust influences satisfaction indirectly via the personal sense of power and via the moderating effect, which has an impact on the proposed mediation effect. Thus, the present findings emphasize that trust contributes to job satisfaction via personal sense of power particularly among employees who experience moderate to low levels of trust in the other group members, as they are more likely to rely on their personal sense of power as a substantial motivation source.

5.5.1 Implications and Future Directions

The findings of this study have several theoretical and practical implications which suggest a number of fruitful directions for future research. Only by taking the moderated mediation into account, were we able to provide reliable evidence for the proposed notion that personal sense of power mediates the trust-job satisfaction relation, particularly when individuals experience lower levels of trust in their colleagues. Similarly to Langfred (2004) and Wiedemann and colleagues (2009), we believe that considering such moderated mediation assumptions might be highly beneficial for theory building, because they help to explain how indirect effects vary at different levels of moderating conditions, and when a given indirect effect occurs. Thus, our theoretical model and the empirical findings lay a broad framework and solid foundation for future inquiry that could advance our understanding of the psychological processes behind social capital at work and their crucial impact on important organizational outcomes such as employee satisfaction.

Interventions based on the theoretical argumentation underlying the simple mediation model are likely to promote training and activities aimed at increasing the relationship quality between employees, which would potentially enhance their perceptions of self-power, and thus lead to higher job satisfaction. However, interventions of this sort run the risk disregarding or underestimating the moderating effect of trust.

On one hand, we observed that as long as trust was high, one's personal sense of power had relatively little impact on employee job satisfaction. Thus, our results point to the fact that an organizational climate of trust and high-quality relationships between employees is an important prerequisite for job satisfaction, and should definitely be the practical focus for organizational managers. On the other hand, interpersonal trust appeared to affect both employee's sense of power and the degree to which one's feelings of power account for job satisfaction. Thus, interventions might be most effective when targeting trust *in combination with* personal sense of power. Our findings suggest that perceptions of self-power serve as a crucial motivator and a source of satisfaction especially for those employees who reported low levels of trust in their colleagues. In these cases, the elevated sense of power can help

compensate for some of the drawbacks of the immediate interpersonal relationships characterized by mistrust. It appears as though particularly in organizational settings where quick criticism, judgmental attitudes, and condescending behaviors by employees may result in an atmosphere of mistrust and defensiveness, intervention programs targeting the employees' self-power perceptions should be associated with increases in employee job satisfaction.

Taken together, the current study indicates that employees' appraisals of their personal power are crucial sources of motivation and satisfaction. Particularly in cases when trust and mutual support are lacking, these personal power perceptions become of increased importance. Managers should therefore be aware of the organizational climate and group dynamics driven by manipulation and hidden agendas and in these specific situations devote as much effort as possible to enhance employee's sense of personal power.

5.5.2 Limitations of the Study

Although the current study makes an interesting contribution to the existing research on interrelationships between trust, power and job satisfaction, there are a number of limitations that should be acknowledged. First, we used perceptual, self-reported measures of interpersonal trust, power and job satisfaction. Nonetheless, it was the employees' perceptions in which we were interested. This approach takes the view that people are likely to react to *their own perceptions* rather than to *some objective reality* (Thomas & Velthouse, 1990; Spreitzer, 1996). Furthermore, Spector (1994) and Spector & Brannick (1995) have suggested that self-reports generate insights into how people feel about and react to their work and into relationships among various feelings and perceptions. Following these earlier studies, we believe that it is the individual's perception of interpersonal trust and his or her power that would most likely relate to his or her own satisfaction.

Second, this study did not include other moderators or additional mediators that may influence the relationships of interest. More research is needed that integrates other variables to increase our understanding of the relation between interpersonal trust, personal sense of power and job satisfaction. Furthermore, we believe that research on other organizational outcome variables is worthwhile. It would be interesting to explore whether personal sense of power similarly mediates the relation between trust and commitment, performance or turnover intentions, and whether the mediation effects would remain constant across different trust levels.

Third, the cross-sectional measurement of the trust and personal sense of power limits the possibility of strong inferences for cause and effect relations. Nevertheless, by assessing the predictor and the mediator at the same point in time (T1), we could avoid confounding effects with temporal proximity between the mediator and the dependent variable assessed at the second time point (Wiedemann et al., 2009). Furthermore, the utilized two-wave panel

design enabled us to conduct a more stringent test of the hypothesized relations between trust, sense of power and job satisfaction. Hence, we could address the issues of reverse causality and exclude the possibility that the hypothesized effects work in the opposite direction.

Finally, the organization we examined in this study operated in a child-care field, and could be best described as a non-competitive setting with a work environment generating relatively high levels of trust among employees. This choice of a non-entrepreneurial and less hierarchically structured setting limits the generalizability of our results. It could be argued that the client-oriented work and the generally positive informal atmosphere between employees may be contributing to the effects that one would not expect elsewhere. On the other hand, we would like to emphasize that our focus on this particular organization provided us with an opportunity to test the relationships between trust, personal sense of power and employee satisfaction in a setting with a small, but nevertheless solidified informal organization. The effects identified were robust relatively strong suggesting that the reported here processes would be even more likely to unfold in a larger, more formal, hierarchically structured workplace, in which a more competitive environment generates lower levels of trust. More research will be needed to assess whether our findings can indeed be generalized to a broader range of organizational settings.

5.5.3 Conclusion

The present study aimed to explain the variations in individual job satisfaction by looking at variations in trust and perceived self-power. We tested a parsimonious moderated mediation model in which trust serves as an independent variable of a simple mediation process, and additionally as a moderator. Our results are essentially twofold: we show that the sense of power mediates the trust-job satisfaction relation, and it matters most in cases when employees reported lower levels of trust in their colleagues.

This investigation therefore extends previous research by utilizing an integrated moderated mediation perspective to examine the interrelationships between interpersonal trust, employee's sense of power and job satisfaction, which had not been previously investigated, and provides support for the notion that the strength of the proposed mediation effect depends on the level of trust. These insights could not be gained by focusing on approaches that examine mediation and moderation separately.

We believe that our findings have interesting implications for both theory development and practice. We hope that they will encourage and guide future research toward a more integrative theorizing approach concerning mediating and moderating effects, so as to advance our understanding of the complex relationships between trust, power and important organizational outcomes.

Nederlandstalige samenvatting[8]

Sociale Netwerken en Informele Invloed in Organisaties

Uit onderzoek blijkt dat macht, of invloed, een fundamentele dimensie is in sociale interactie. Invloed door personen gebruikt wordt om de eigen sociale relaties te definiëren, te begrijpen en te organiseren (Brown, 1985; Kramer & Neale, 1998; Lonner, 1980; Mazur, 1973). Vooral binnen organisaties wordt invloed gebruikt om te vast te stellen wie toegang heeft tot waardevolle bronnen, wie gezag uitoefent over anderen en wie belangrijke beslissingen neemt. Wat misschien verrassend lijkt: het is niet ongebruikelijk dat mensen met een lagere positie in een organisatie aanzienlijke invloed verwerven, die niet overeenkomt met hun formele positie binnen deze organisatie. Aan de ene kant kunnen informeel invloedrijke individuen het functioneren van de organisatie belemmeren door de netwerkstructuur te manipuleren en sociale beïnvloeding uit te oefenen (Balkundi & Kilduff, 2005). Aan de andere kant kan het vermogen van informeel invloedrijke individuen om de inzet en het vertrouwen van de leden van de organisatie te winnen ook nuttig zijn voor de organisatie (Krackhardt & Hanson, 1993) en zelfs voor hun eigen welzijn.

Informele invloed lijkt in elke organisatie te bestaan en een cruciale rol te spelen in een soepel functioneren of uiteenvallen van de organisatie. Vervolgens kunnen we de volgende vraag stellen: *wat zijn de oorzaken van individuele informele invloed?* En: *wat zijn de mogelijke gevolgen?* Met andere woorden: *onder welke omstandigheden verkrijgen individuen in een organisatie informele macht?* En: *onder welke omstandigheden beïnvloedt informele macht de dynamiek van groepen (bijv. het ontstaan van vriendschappen) en heeft het gevolgen voor het individu (bijv. welzijn)?*

Er is een aanzienlijke hoeveelheid theorievorming en er is veel onderzoek gedaan naar de mechanismen die ten grondslag liggen aan de verschillen in informele invloed van medewerkers (bv., Burt, 1992; Emerson, 1962;. Harms et al., 2007). Maar het werk tot nu toe is verricht is zeer gefragmenteerd en het is verspreid over verschillende subdisciplines in de sociale wetenschappen. Hierdoor zijn de veronderstelde mechanismen niet duidelijk ontrafeld en systematische pogingen om de specifieke voorwaarden te bepalen die de activering van het een of ander mechanisme beïnvloeden ontbreken.

Vandaar ook dat het doel van het onderzoek in dit proefschrift is het uitwerken en ontwikkelen van *acht fundamentele mechanismen,* die gerelateerd zijn aan vier types oorzaken en vier types gevolgen van informele invloed. De mechanismen zijn benaderd op drie verschillende analyseniveaus, namelijk het 'aggregate structural' niveau (structurele positie van het individu in het netwerk), het interindividuele (dyade) en het intra-individuele niveau.

[8] Sincere thanks to Lea Ellwardt, Katia Begall and Saskia Simon for help with the translation of the summary.

Hierna volgt eerst een overzicht van de gegevens die voor het huidige onderzoek zijn gebruikt. Vervolgens bespreken we in het kort elk getoetste mechanisme in combinatie met de relevante empirische bevindingen.

De *gegevens* voor het huidige onderzoek komen van panelstudies in twee organisatorische contexten met contrasterende hiërarchische structuren en medewerkerskenmerken. Hoofdstuk 2 is gebaseerd op vier metingen van volledige netwerkgegevens die eind 1995 tot media 1997 verzameld werden onder 17 mannelijke leden van het "extended" managementteam van een *Duitse papierfabriek* (zie Wittek, 1999, voor een gedetailleerde beschrijving van de organisatiesetting). De organisatie werd gekenmerkt door een traditionele verticale hiërarchie en een tamelijk competitieve werksfeer; het "extended" managementteam bestond uit de Chief Operating Officer, de afdelingshoofden, hun assistenten en hun junior engineers – de assistenten en de junior engineers rapporteerden aan de afdelingshoofden. De tweede organisatie bevindt zich in de publieke sector en is een *Nederlandse kinderopvangorganisatie*, die het best kan worden omschreven als niet-hiërarchisch met erg weinig promotiekansen en een coöperatieve werksfeer.

Hoofdstuk 3 is gebaseerd op de 'cross sectional' netwerkgegevens uit een medewerker enquête. De enquête werd in het voorjaar van 2009 gehouden onder alle 33 medewerkers van één afdeling van de kinderopvangorganisatie (de kleuterschool-afdeling). In Hoofdstuk 4 analyseren we sociale netwerk gegevens van een tweede afdeling binnen dezelfde organisatie. Hier werden drie metingen bij 44 medewerkers afgenomen (in voor- en najaar 2009 en voorjaar 2010). Hoofdstuk 5 ten slotte is gebaseerd op twee metingen onder medewerkers. De gegevens zijn verzameld via een willekeurige steekproef onder 82 werknemers van dezelfde organisatie (najaar 2009 en voorjaar 2010). Nagenoeg alle werknemers die deelnamen aan deze studies waren vrouwelijke maatschappelijk werkers.

De gekozen organisatie settingen waren om een aantal redenen heel geschikt voor de doelen van ons project. Ten eerste konden we door de relatief kleine omvang van de benaderde teams / afdelingen gegevens van een compleet sociaal netwerk verzamelen. Uitgaande van onze speciale interesse voor informele groepsdynamica konden we de verschillende types relaties onder de medewerkers direct en nauwkeurig benaderen door vragenlijsten te sturen die de medewerkers zelf invulden en terugstuurden en waarin de deelnemers in detail konden reageren op diverse aspecten van hun relaties met elke collega op de specifieke werkplek.

Ten tweede, door te focussen op twee sterk verschillende organisaties was het voor ons mogelijk om na te gaan hoe algemeen geldend de geïdentificeerde mechanismen zijn die ten grondslag liggen aan de relatie tussen machtsreputaties en interpersoonlijke netwerken van de medewerkers.

Voorwaarden voor informele invloed

Structurele positie (netwerk en interindividueel niveau). Theoretici op het gebied van sociale netwerken conceptualiseren organisaties als netwerken van onderling verbonden structurele posities die door individuele medewerkers bezet zijn. Informele organisatienetwerken zijn een krachtig mechanisme voor de controle en distributie van een breed scala aan hulpmiddelen (Brass, 1992; Krackhardt, 1990). Naar verwachting beïnvloedt de positie van het individu in de informele structuur van de organisatie dan ook zijn machtsreputatie. Algemeen wordt aangenomen dat individuen die een gunstige positie innemen in het netwerk meer toegang hebben tot en controle hebben over waardevolle hulpbronnen en dat zij daardoor worden gezien als potentieel machtig. In overeenkomst met deze structuralistische visie op sociale netwerk analyse toont *Hoofdstuk 3* aan dat goed ingebedde medewerkers die uitgebreid contact hebben met veel collega's als invloedrijk worden ervaren. De vele contacten werden door anderen blijkbaar als een indicator van invloed gezien. Interessant genoeg hadden *geen* van de overige meer complexe en dus minder zichtbare predictoren van structureel voordeel (bijv. betweenness centrality, closeness centrality, aggregate en dyadic constraint,) effect op de bij collega's waargenomen invloed.

Het delen van een hechte persoonlijke band (interindividueel niveau). Een hecht, frequent en direct contact met een collega geeft informatie uit de eerste hand over zijn of haar sociale relaties met andere groepsleden en de macht die de collega binnen deze relaties heeft. Collega's die een vertrouwensband hebben en die elkaar mogen hebben waarschijnlijk dezelfde mentaliteit en reageren positief op elkaars gedrag en opvattingen. Er kan dan ook verwacht worden dat medewerkers die door een interpersoonlijke vertrouwensrelatie verbonden zijn meer kans maken op (wederkerige) toeschrijving van invloed dan medewerkers die geen interpersoonlijke vertrouwensrelatie hebben. In overeenstemming met deze verwachting suggereren onze bevindingen in *Hoofdstuk 2* dat medewerkers meer geneigd zijn collega's als invloedrijk te zien als zij een sterke vertrouwensband met deze collega's hebben.

Ervaren vertrouwen in anderen (intra-individueel niveau). Inbedding in sociale vertrouwensrelaties wordt ook in verband gebracht met een gestegen gevoel van persoonlijke invloed. Werknemers die veel vertrouwen stellen in hun collega's zullen vaker positieve signalen ontvangen van anderen over de waarde van hun adviezen en de kwaliteit van hun prestaties. Hierdoor gaan ze positiever denken over hun eigen competentie, potentieel, eigenwaarde, autonomie en invloed (Corsun & Enz, 1999; Ergeneli et al., 2007; Erturk, 2010; Manz & Sims, 1993; Proenca, 2007; Thomas & Velthouse, 1990). In *Hoofdstuk 5* kan inderdaad worden aangetoond dat hoge niveaus van algemeen vertrouwen in collega's het gevoel van eigen invloed van een medewerker stimuleren.

Reputatie (netwerkpositie, inter- en intra-individueel niveau). Het reputatiemechanisme bestaat uit een aantal elementen. Ten eerste: de conclusies en oordelen van anderen over

invloed van de collega kunnen als een effectief signaal worden gebruikt om de indruk te wekken dat men invloed heeft. Als een collega als invloedrijk wordt gezien door vele anderen (d.w.z. hij heeft een positieve machtsreputatie) dan verspreidt deze informatie zich zoals te verwachten is via het netwerk en manifesteert zich door extra toewijzingen van invloed. De empirische bevindingen in *Hoofdstuk 2* bevestigen dit idee: het aantal voorafgaande toewijzingen van invloed aan een persoon beïnvloeden het aantal toekomstige toewijzingen.

Ten tweede: hechte persoonlijke relaties met machtige groepsleden zijn voor anderen een sterke prikkel om hun collega als invloedrijk te zien en als een potentieel nuttig contact (bijv. Kilduff & Krackhardt, 1994). De reden hiervoor is dat de waargenomen status van de uitwisselende partners een soort verstorend filter is met betrekking tot de desbetreffende persoon (Podolny, 2001). Onze bevindingen in *Hoofdstuk 2* bieden ondersteuning voor dit zogenaamde "basking in reflected glory" effect. Een vertrouwensrelatie met een meerdere (een formeel invloedrijke collega) heeft een positief signaaleffect en laat de invloed van de collega stijgen in de ogen van anderen. Opmerkelijk is echter dat hetzelfde niet is aangetoond in *Hoofdstuk 4*: in een omgeving waar een vlakke hiërarchie heerst leverde vriendschap met een informeel invloedrijke collega geen aanzienlijke voordelen op in termen van invloedrijke reputatie.

Tot slot, als we even verder kijken dan de structurele visie op invloed: er wordt ook aangevoerd dat mensen informele invloed verwerven door hun dominantie te tonen en te verdienen in sociale interacties (Lee & Ofshe, 1981; Mazur, 1985; Strayer, 1995). Individueel gedrag heeft veel impact op iemands machtsreputatie en in het bijzonder de vaardigheid van de medewerker om een bepaalde gedragsstijl toe te passen waarmee hij anderen beïnvloedt (bijv. Allen & Porter, 1983; Ferris, Adams, Kolodinsky, Hochwarter, & Ampèremeter, 2002; Kipnis, Schmidt, & Wilkinson, 1980; Mowday, 1978). Het is interessant dat in de sterk hiërarchische papierfabriek, die in *Hoofdstuk 2* bestudeerd is, een voorkeur voor directe of indirecte horizontale strategieën de machtsreputatie van een medewerker niet deed toenemen. Maar een voorkeur voor passieve en indirecte verticale strategieën had wel een negatief effect op die door anderen toegeschreven invloed. De bevindingen in *hoofdstuk 3* benadrukten dat slimme strategische activiteit op de werkplek en dominantiesignalen naar anderen niet alleen een nuttige tactiek zijn bij een gebrek aan middelen maar dat zij hiermee ook de eigen invloed versterken. Al met al: de in *Hoofdstuk 2 en 3* besproken effecten van strategisch gedrag benadrukken het idee dat invloed en reputatie op de werkvloer tot stand komen door zichtbaarheid en dat de zichtbaarheid bestaat uit openlijk dominant gedrag van een werknemer (*Hoofdstuk 3*) of een duidelijk gebrek daaraan (*Hoofdstuk 2*).

Gevolgen van informele invloed

Toewijzen van (meer) invloed aan anderen (netwerkpositie niveau). Een sterke of zwakke structurele positie in het netwerk innemen heeft niet alleen gevolgen voor de macht die aan

het individu wordt toegeschreven maar ook voor de toewijzing van reputatie en invloed door de individuele werknemer aan andere groepsleden. Een ongunstige netwerkpositie plaatst het individu in een toestand van afhankelijkheid en beperkte autonomie (Burt, 1992; Cook & Emerson, 1978), wat gevoelens van hulpeloosheid en vrees met zich meebrengt (Keltner, Gruenfeld, & Anderson, 2003) en een grotere neiging om te geloven dat anderen macht over je hebben. Naar aanleiding van dit idee toont *Hoofdstuk 3* aan dat zwak ingebed zijn de neiging versterkt om meer macht aan de collega's toe te schrijven.

Ontvangen van (meer) vriendschappen van anderen (inter- en intra-individueel niveau). Machtige lieden worden vaker actief benaderd door anderen die graag een persoonlijk band met hen aan willen gaan dan minder machtige personen (Benjamin & Podolny, 1999). De motivatie om vriendschapsbanden aan te gaan met de invloedrijken kan sterker worden door bepaalde individuele disposities. De bevindingen van de longitudinale studie in *Hoofdstuk 4* bevestigen dit. Aangetoond werd dat strategisch vaardig zijn in relaties en over een goede zelfcontrole beschikken een significant positief effect hebben op iemands neiging om potentieel voordelige persoonlijke banden te sluiten, zoals vriendschap met invloedrijke collega's. Niet alle medewerkers waren even sterk geneigd om invloedrijke collega's te benaderen – alleen de meer instrumenteel ingestelde medewerkers joegen de voordelen na die vriendschap met invloedrijke collega's bieden.

Verlenen van vriendschap door de invloedrijken (inter-individuele niveau). Vriendschappen en sympathie worden, zoals verwacht kan worden, door instrumenteel gemotiveerde invloedrijke individuen gebruikt om hun positie in de groep te handhaven. Meer in het algemeen worden uitwisselingsbanden tussen leden van de organisatie beheerst door de normatieve verplichting te voldoen aan verwachtingen van wederkerigheid (bijv. Molm, Schaefer, Collett, 2007) en ze zijn allereerst gebaseerd op de verwachting dat voordelen worden gegeven in ruil voor ontvangen voordeel (Winstead & Derlega, 1986). Het wederkerigheidsprincipe zal naar verwachting effect hebben op het proces van vriendschap verlenen: het wordt het onderwerp van de hierboven aangeduide ruillogica. Respect en waardering toekennen kunnen dus worden uitgewisseld ('gelijk oversteken!') met vriendschap. In overeenstemming met deze redenering zagen wij dat informeel invloedrijke groepsleden de neiging hadden om vriendschap te sluiten met die medewerkers die hen als machtig zagen. Dit empirische resultaat van *Hoofdstuk 4* bevestigt dat invloedrijke individuen er een veel pragmatischer benadering van relaties op nahouden. Bovendien levert het resultaat ondersteuning voor het idee dat het toekennen van invloed wordt "beantwoord" met vriendschap, die op zijn beurt "verhandeld" wordt voor respect.

(*Meer) welzijn (intra-individueel niveau)*. In persoonlijke contacten wordt sociaal kapitaal opgebouwd, waarmee kansen en ondersteuning worden verkregen en waardoor de eigen doelen en nastrevingen voor het individu werkelijkheid kunnen worden (Burt, 1992, 2000). Sociale relaties en de individuele positie in een groep zijn daarom fundamentele

instrumenten om psychisch welbevinden te realiseren (bijvoorbeeld Bourdieu, 1986; Burt, 1992; Coleman, 1988; Lowe & Schellenberg, 2001; Requina, 2003). Dit houdt in dat de individuele perceptie van eigen invloed en status in een groep cruciaal is voor een diepgaand begrip van hoe mensen denken over en reageren op hun werk. In situaties waarin geen vertrouwen is in collega's is het gevoel zelf invloedrijk te zijn naar verwachting een substantiële bron van motivatie, die een "compensatie" kan zijn voor de affectieve voordelen die deze individuen niet krijgen uit hun interpersoonlijke vertrouwensrelaties. In overeenstemming met dit argument laten onze bevindingen in *Hoofdstuk 5* zien dat vertrouwen bijdraagt aan werktevredenheid door het gevoel invloedrijk te zijn, voornamelijk onder werknemers die matige of lage niveaus van vertrouwen in andere groepsleden tonen. In de gevallen waarin vertrouwen lijkt te ontbreken wordt het inschatten van de eigen invloed belangrijker en dient het als cruciale bron van motivatie en werktevredenheid.

Concluderend: een van de bijdragen van deze dissertatie is de introductie van een dynamische geïntegreerde benadering van het onderzoek naar de oorzaken en gevolgen van informele invloed in organisaties. In vier empirische studies, de Hoofdstukken 2 tot en met 5 van dit boek, hebben we acht fundamentele mechanismen uitgewerkt en de specifieke voorwaarden vastgesteld voor de activering van elk mechanisme. Bovendien zijn de oorzaken en gevolgen van informele macht behandeld op drie analyseniveaus: de structurele positie van de het individu die verder verfijnd is in de interindividuele en intra-individuele richting. Maar misschien het belangrijkste is dat de gekozen aanpak het mogelijk maakt de verschillende theoretische perspectieven te combineren in één overkoepelend kader dat de aandacht vestigt op de cognitieve grondslagen van informele invloed. Dit levert nieuwe inzichten op over *zichtbaarheid* als een alomvattend mechanisme dat ten grondslag ligt de voorwaarden en gevolgen van informele invloed in organisaties. De gemakkelijke toegang tot informatie over dominantie speelt waarschijnlijk, in relationele dynamica die gerelateerd is aan de medewerkers' machtsreputatie, een veel belangrijker rol dan tot dusver door netwerkonderzoekers is verondersteld. Het huidige onderzoek draagt tevens bij aan de verdere ontwikkeling van onderzoek naar informele invloed door gebruik te maken van longitudinaal gemeten volledige netwerkgegevens, verzameld in twee contrasterende bestaande organisaties en door toepassing van de meest recente innovatieve ontwikkelingen in het kwantitatieve sociale netwerk analyse. Naar wij hopen zullen de theoretische en empirische inzichten die wij door middel van deze studie verkregen een stimulans zijn voor toekomstige onderzoekingen naar dit zowel belangrijke als fascinerende onderwerp.

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Appendix

Dutch Questionnaire

Informal Power

Het komt vaak voor op het werk dat sommigen meer *invloedrijk* zijn dan anderen. Hiermee worden mensen bedoeld die duidelijke opvattingen over toestanden op het werk hebben, die die opvattingen aan anderen communiceren en zo collega's beïnvloeden in hun meningsvorming.

Geef voor elk van de volgende personen aan in welke mate zij invloed hebben op de dagelijkse gang van zaken op het werk.

The question was followed by an alphabetical names list of all employees working at the site including the site manager. Answer categories were presented for every employee on the list and included:

1 =Zeer weinig invloed

2

3

4

5 =Zeer veel invloed

Weet ik niet

Ik ken deze persoon niet

Frequency of Communication

Hoe vaak heeft u de afgelopen drie maanden op het werk met elk van de volgende collega's gepraat? Denkt u hierbij zowel aan informele praatjes als ook meer formele gesprekken.

The question was followed by an alphabetical names list of all employees working at the site including the site manager. Answer categories were presented for every employee on the list and included:

1 = Nooit
2 = Minder dan 1 keer per week
3 = Ca. 1 tot 2 keer per week
4 = Ca. 3 tot 4 keer per week
5 = Ca. 5 tot 7 keer per week
6 = Ca. 8 of meer keer per week
Weet ik niet
Ik ken deze persoon niet

Quality of Social Relationship (Friendship)

Met sommige collega's is er een zeer goede relatie; sommigen zijn misschien zelfs goede vrienden. Met andere collega's gaat het contact echter minder goed.

Wat een "goede vriend" of een "zeer moeizame" relatie is, is voor iedereen anders. Hier zijn we geïnteresseerd in uw eigen inschatting. Bijvoorbeeld, wie van uw collega's zou u een "goede vriend" noemen, of met wie vindt u de relatie "zeer moeizaam". Hoe zou u uw relatie met elk van de volgende personen beschrijven?

The question was followed by an alphabetical names list of all employees working at the site including the site manager. Answer categories were presented for every employee on the list and included:

1 =Zeer moeizame relatie
2 =Moeizame relatie
3 =Niet moeizaam en niet vriendschappelijk
4 =Vriendschappelijke relatie
5 =Goede vriend
Weet ik niet
Ik ken deze persoon niet

Strategic Behavior

Items were taken and slightly modified from the studies of Kyl-Heku and Buss (1996) and Kipnis, Schmidt, and Wilkinson (1980).

"De volgende stellingen gaan over wat mensen soms doen om meer invloed op de relatie met collega's en leidinggevende(n) te krijgen, en om beslissingen en werkzaamheden in het team te beïnvloeden."

Hoe waarschijnlijk het is dat u dit zou doen?	**Zeer onwaarschijnlijk**						**Zeer waarschijnlijk**
1. De 'juiste' mensen kennen.	❍	❍	❍	❍	❍	❍	❍
2. Proberen steun te krijgen van mensen hoger in de organisatie.	❍	❍	❍	❍	❍	❍	❍
3. Aanvoelen op welk moment en hoe je bepaalde zaken het beste naar voren kunt brengen.	❍	❍	❍	❍	❍	❍	❍

In *Chapter 4*, strategic behavior was captured by the following item:

Veel communiceren met collega's en leidinggevenden.	❍	❍	❍	❍	❍	❍	❍

Self-monitoring

Items were taken from Lennox and Wolfe (1980) *self-monitoring* scale.

"De volgende beweringen gaan over *persoonlijkheidskenmerken*. Hier willen we graag weten in hoeverre elke stelling overeenkomt met jouw mening en overtuiging over jezelf of kenmerkend is voor jouw persoonlijkheid."

In hoeverre zijn de volgende uitspraken op u van toepassing?	**Niet op u van toepassing**						**Op u van toepassing**
1. Ik ben in staat te beheersen hoe ik overkom op anderen, afhankelijk van de indruk die ik hen wil geven.	❍	❍	❍	❍	❍	❍	❍
2. Ik ben in gesprekken gevoelig voor zelfs de kleinste verandering in de gezichtsuitdrukking van mijn gesprekspartner.	❍	❍	❍	❍	❍	❍	❍
3. Mijn intuïtie is vrij goed als het gaat om het begrijpen van emoties en beweegredenen van de ander.	❍	❍	❍	❍	❍	❍	❍
4. Ik kan normaal gesproken zien wanneer anderen een grap niet kunnen waarderen, zelfs als ze er overtuigend om lachen.	❍	❍	❍	❍	❍	❍	❍
5. Als het beeld van mezelf dat ik probeer over te brengen op anderen naar mijn gevoel niet werkt, kan ik het snel veranderen in iets dat wel werkt.	❍	❍	❍	❍	❍	❍	❍
6. Ik kan het normaal gesproken zien aan de ogen van mijn toehoorders wanneer ik iets ongepasts heb gezegd.	❍	❍	❍	❍	❍	❍	❍
7. Ik ben er achter gekomen dat ik in elke situatie mijn gedrag kan aanpassen aan de eisen van de situatie.	❍	❍	❍	❍	❍	❍	❍
8. Als ik weet waar de situatie om vraagt is het gemakkelijk voor mij om mij in overeenstemming daarmee te gedragen.	❍	❍	❍	❍	❍	❍	❍

Personal Sense of Power

Items were adapted from Anderson, John, and Keltner (2005) study.

"De volgende vragen gaan over *invloed* op ***collega's***. Iedereen heeft een aantal overtuigingen over zijn of haar invloed op de relatie met collega's. Lees de volgende uitspraken zorgvuldig door en geef aan in hoeverre u het met de stellingen eens bent."

In hoeverre bent u het eens of oneens met de volgende stellingen?	**Volledig mee oneens**			**Neutraal**			**Volledig mee eens**
1. Ik kan collega's laten luisteren naar wat ik te zeggen heb.	❍	❍	❍	❍	❍	❍	❍
2. Zelfs als ik mijn opvattingen uitspreek maken ze weinig indruk op mijn collega's.	❍	❍	❍	❍	❍	❍	❍
3. Ik denk dat ik behoorlijk wat invloed heb op mijn collega's.	❍	❍	❍	❍	❍	❍	❍
4. Mijn ideeën en meningen worden vaak genegeerd door mijn collega's.	❍	❍	❍	❍	❍	❍	❍

"De volgende beweringen gaan over invloed op de relatie met uw directe **leidinggevende(n)**."

In hoeverre bent u het eens of oneens met de volgende stellingen?	**Volledig mee oneens**			**Neutraal**			**Volledig mee eens**
5. Ik kan leidinggevenden laten luisteren naar wat ik te zeggen heb.	❍	❍	❍	❍	❍	❍	❍
6. Zelfs als ik mijn opvattingen uitspreek maken ze weinig indruk op mijn leidinggevenden.	❍	❍	❍	❍	❍	❍	❍
7. Ik denk dat ik behoorlijk wat invloed heb op mijn leidinggevenden.	❍	❍	❍	❍	❍	❍	❍
8. Mijn ideeën en meningen worden vaak genegeerd door mijn leidinggevenden.	❍	❍	❍	❍	❍	❍	❍

Trust in Colleagues

Items were taken from Cook and Wall's (1980) scale on *interpersonal trust at work*.

In hoeverre bent u het eens of oneens met de volgende stellingen?	**Volledig mee oneens**			**Neutraal**			**Volledig mee eens**
1. Ik weet dat mijn collega's me zullen proberen te helpen als ik op mijn werk in de problemen raak.	❍	❍	❍	❍	❍	❍	❍
2. Ik kan er op vertrouwen dat mijn collega's doen wat ze beloven te doen.	❍	❍	❍	❍	❍	❍	❍
3. Ik heb het volste vertrouwen in de kennis en vaardigheden van mijn collega's.	❍	❍	❍	❍	❍	❍	❍
4. Ik kan er op vertrouwen dat mijn collega's me helpen als ik dat nodig heb.	❍	❍	❍	❍	❍	❍	❍
5. Ik kan er op vertrouwen dat mijn collega's doorgaan met hun werk, ook als de leidinggevenden afwezig zouden zijn.	❍	❍	❍	❍	❍	❍	❍
6. Ik kan er op vertrouwen dat mijn werk niet nodeloos ingewikkeld wordt gemaakt door nalatigheid van mijn collega's.	❍	❍	❍	❍	❍	❍	❍

Job Satisfaction

This scale was developed by the researchers based on in-depth interviews and a pilot study in the organization.

Hoe tevreden bent u met…	**Zeer ontevreden**			**Neutraal**			**Zeer tevreden**
1. … uw huidige baan?	❍	❍	❍	❍	❍	❍	❍
2. … uw taken?	❍	❍	❍	❍	❍	❍	❍
3. … uw salaris?	❍	❍	❍	❍	❍	❍	❍
4. … de samenwerking met uw collega's?	❍	❍	❍	❍	❍	❍	❍
5. … uw werkdruk?	❍	❍	❍	❍	❍	❍	❍

Note that, where necessary, scales were translated from English to Dutch using the forward-backward procedure.

For the original wording of the items used in *Chapter 2*, please see Wittek (1999), pp.274-286.

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Curriculum Vitae

Alona Labun was born on December 22nd, 1983 in Moscow, Russia. She attended school in Uzhgorod, Ukraine and later moved to Tel Aviv, Israel, where in 2004 she obtained her BA in Behavioral and Social Sciences. In 2005 she relocated to the Netherlands to continue her academic education at Utrecht University, graduating with an MSc degree in Developmental Psychology in May 2007. In September 2007 she joined the Interuniversity Center for Social Science Theory and Methodology (ICS) at the University of Groningen, where for the next four years she held a position as Doctoral Researcher and conducted research on social networks and informal power dynamics in organizations. The outcomes of her work are presented in this dissertation. Since September 2011, Alona holds a position of a Postdoctoral Researcher at the Faculty of Economics and Business at the University of Groningen. Her current work focuses on the changing role of general practitioners in the quest for demand-driven and efficient elderly care.

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